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ML 2917, ML 2951 AND ML 2994; EML 4346-4348 BIRDWOOD CLAY AND SILICA QUARRY

GEOLOGICAL REPORT

Submitted by Newbold General Refractories Ltd 1975

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NEWBOLD GENERAL REFRACTORIES LTD

RAW MATERIALS DIVISION

BIRDWOOD CLAY AND SILICA QUARRY

Sections 1 and 6397, Hundred of Talunga, County of Adelaide

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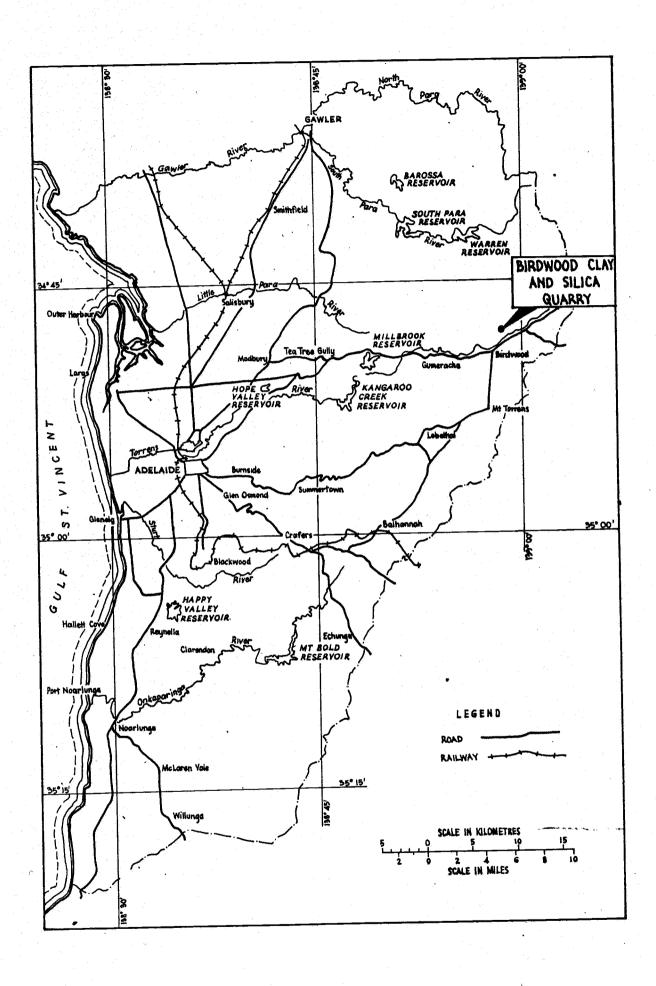
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GEOLOGIST

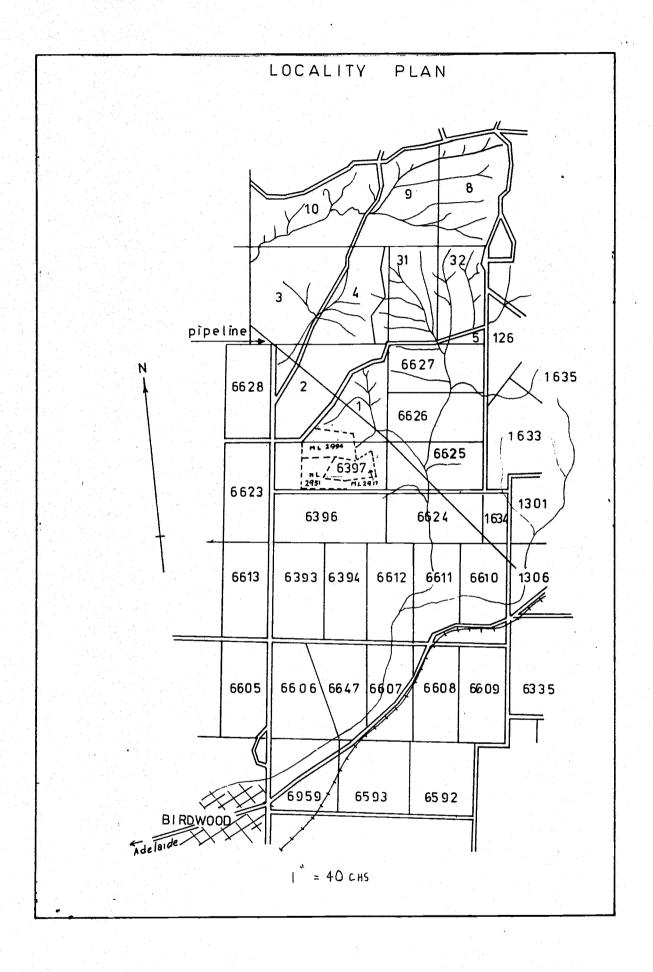
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NEWBOLD GENERAL REFRACTORIES LTD

RAW MATERIALS DIVISION

S.A. Clay Deposits
Report No. 6

BIRDWOOD CLAY AND SILICA QUARRY

Section 1 and 6397, Hundred of Talunga, County of Adelaide

ABSTRACT

Argillite and quartzite in Saddleworth Formation (Burra Group) of Adelaidean age altered during a Tertiary deep weathering cycle, are excavated for refractory and other raw materials near Birdwood in the Mount Lofty Ranges, S.A.

From 1971 to 30 June 1975, recorded production totals 35,555 tonnes of white clay-shale for fireclay, white clay and kaolin and 30,635 tonnes of decomposed quartzite for refractory silica and road construction material.

Fireclay alumina content on a calcined basis ranges from 18.0 per cent to 46.2 per cent and averages 37.0 per cent. Softening Point and Fusion Point average 1710° C and 1730° C respectively.

Kaolin is yellowish-white and below ceramic and paper filler grades. Investigation of treatment methods to improve colour is required.

Evaluation of washed silica as an industrial milled product is warranted.

A core drilling programme of 22 holes totalling 908 metres, sampling and geological mapping provide a basis for defining quarry limits.

Within a proposed quarry development plan 3.89 million tonnes of white clay-shale and 4.25 million tonnes of decomposed quartzite are available.

Location: 3 kilometres north of Birdwood and 48 kilometres northeast of Adelaide in sections 1 and 6397, hundred of Talunga, county of Adelaide (see Plans S26, S26b and S23).

INTRODUCTION

Birdwood clay and silica quarry supplies raw material to Newbold General Refractories Ltd. - Beverley brickworks, Jarvis Industries P/L and other companies.

This report presents geological data to provide a basis for future quarry design and development.

Fieldwork was carried out by the writer intermittently from January 1975 to August 1975. Drilling programme from February 1974 to August 1974 was supervised by J.H. Callender, Manager, Raw Materials Division.

Geological drillhole logs and analytical data are presented in the appendices.

Access to the quarry is by 0.3 kilometres of graded track which junctions east from graded Cromer Road at distances of 2.9 kilometres north of Birdwood and 0.1 kilometres south of Lucky Hit Road intersection (see plan No. S23).

MINING TENEMENTS

Details of mining tenements held by Newbold General Refractories Ltd and other companies are summarised on plan No. S23.

Section 6397, hundred of Talunga is gazetted a Temporary Timber Reserve controlled by the Director of Lands, S.A. Lands Department whose permission is required to clear and remove timber.

Birdwood clay and silica quarry is situated within the Adelaide Outer Metropolitan Planning Area which is under Interim Development Control.

HISTORICAL BACKGROUND AND PREVIOUS INVESTIGATIONS

From before 1870, section 6397, hundred of Talunga was mined for gold. From Lucky Hit, the best known mine, Brown (1908) reports that 344.2 tonnes of gold ore consigned for treatment to the Government works yielded 9.43 kilograms of gold. Average grade of the ore consigned is a high 27.4 grammes/tonne (p.p.m.).

Clay mining by the South Australian Portland Cement Co. Ltd. began before 1938 and the operations were later taken over by Jarvis Industries P/L. In 1967 the deposit was acquired by Newbold General Refractories Ltd.

The first geological mapping was carried out by Ridgway (1951) who inspected underground workings, drilled 5 coreholes and outlined the geology. Later

inspections and reserve calculations are described in Ridgway (1953).

Wade (1954) mapped all existing workings, prepared a surface contour plan and recalculated reserves.

In 1966, Newbold General Refractories Ltd. retained the S.A. Department of Mines to perform a diamond drilling programme of seven holes and compile available unpublished geological data (Tarvydas, 1971).

A reconnaissance geological survey of the Birdwood district is reported by Barnett (1972).

The geological plans accompanying this report incorporate results of these previous investigations.

PRODUCTION

Newbold Raw Materials Division manage and supervise all aspects of quarrying. Operations are conducted during dry summer months when clay moisture content is low, and products are stockpiled on a stockpile pad. This procedure ensures all year access to consistent raw material supplies.

The raw materials produced from the quarry are summarised in Table A.

Production for the period from 1971 to 30 June 1975 is detailed in Table B.

Table A: Birdwood Clay and Silica Quarry - Raw Material Products

Rock Type	Product	Specification	Customer	Use
White clay- shale	fireclay	>37% A1 ₂ 0 ₃	N.G.R. Beverley brickworks	refractory bricks
White clay- shale	white clay	white colour	S.A. Portland Cement Co. Ltd.	white cement
White clay- shale	Kl kaolin	kaolinite	Jarvis Indust- ries P/L	milled kaolin
White clay- shale	K2 kaolin	white kaolinite	Jarvis Indust- ries P/L	milled white kaolin
decomposed quartzite	silica	clean	N.G.R. Beverley brickworks	refractory bricks
decomposed quartzite	rubble	none	District Council Gumeracha	road construction

TABLE B: Birdwood Clay and Silica Quarry - Production 1971 - 1975 (tonnes)

Year	1971	1972	1973	1974	½ year to 30 June 1975	TOTAL
fireclay	4,268	1,955	1,876	3,291	1,500	12,890
white clay	3,094	5,456	4,960	4,269	3,261	21,040
Kl kaolin	_	_	56	503	247	806
K2 kaolin	_	_	64	755	 .	819
refractory silica	2,453	1,087	1,109	1,531	1,522	7,702
rubble	1,529	450	9,573	7,534	3,847	22,933
TOTAL	11,344	8,948	17,638	17,883	10,377	66,190

GEOLOGICAL SETTING

Regional geology is shown on ADELAIDE (Thomson, 1969) and described in Parkin (1969).

The Birdwood district situated in the central Mount Lofty Ranges is characterised by low rounded hills.

Bedrock comprises Burra Group rocks of Adelaidean (Torrensian) age consisting of argillites with minor quartzites and Kanmantoo Group rocks of Cambrian age consisting of mica schists. (see Plan No. S23).

Birdwood clay and silica quarry is excavated in the Saddleworth Formation within the Burra Group and near the Adelaidean - Cambrian unconformity.

Bedrock was folded and metamorphosed during the Lower Palaeozoic Delamerian Orogeny. The regional structural trend is north-south and at Birdwood strata dip eastwards.

Micaceous pegmatite dykes, quartz veins and barite veins are developed near Birdwood.

During the Tertiary period, deep weathering converted hard argillites to soft white clay-shales for up to 50 metres below the weathering surface.

Younger alluvial and slope deposits and soil units are widespread.

SITE GEOLOGY

Topography

Topography of the quarry area is shown on plan No. G143, No. G144a and No. G144b.

Undulating slopes fall gently westwards. Run-off drains westwards.

Section 6397 supports thick natural vegetation and section 1 to the north is used for grazing purposes.

Rock Types

Birdwood clay and silica quarry is excavated in argillites and quartzites of the Saddleworth Formation of Adelaidean age which have been altered and decomposed by deep weathering processes during the Tertiary period. The distribution of the various lithologies is shown on plan No. G143.

Argillites consist of metasedimentary schists, phyllites, silty slates and aluminous slates, altered, kaolinised and bleached to white and pale coloured clay-shales which range from kaolinite (silt free) through fireclay (low silt) to white clay (silty). Argillites below the weathering profile and underlying white clay-shales are red-brown and grey-brown in colour. The contact between white clay-shale and red-brown argillite exposed in the quarry drain is sharp and discordent with respect to bedding. Relict bedding in white clay-shale is evident in compositional and textural banding. Thin veins of kaolinitic material cut across bedding.

White clay-shale is overlain by friable weathered quartzite which has decomposed by destruction of grain boundaries. The quartzite ranges from white to pale yellow-brown in colour and thin- to thick-bedded in form and consists mainly of silica with minor mica and heavy minerals. Brown iron staining is common in the near surface zone. The quartzite appears to thicken in the vicinity of the quarry.

Relatively unaltered rocks comprising shales with minor sandstone and quartzite interbeds, crop out on the eastern side of the map area and overlie the main quartzite unit.

Overburden, up to 4 metres deep comprises brown plastic pebbly clay, alluvium and soil units.

Structure

White clay-shale and quartzite are folded into a structural terrace which contains a saucer shaped depression. Quartzite occupies the core of the depression. Highest quality white kaolinite (K_2) is associated with the structural high rimming the saucer shaped depression.

White clay-shale subcrops along the western and northern flanks of the structural terrace.

Structural terraces are an uncommon tectonic feature in the Mount Lofty

Ranges. The structural history of the terrace is not yet resolved, however it may be a tectonic response to increased thickness of quartzite developed within the succession.

Drilling programme

A core drilling programme of 22 holes totalling 908.08 metres has been completed. Drillhole locations on a grid basis are shown on plan No. G143 and geological logs are included in Appendix A. Drillhole intersections are summarised in Table C and shown on cross-sections on plan No. G144a and No. G144b.

Table C: Birdwood Clay and Silica Quarry - Summary of drilling programme

					· · ·						Total depth
Hole No	0verb	urden	S1	ate	Quart	zite	Whi clay-		Sch	nist	drilled (metres)
NO	from	to	from	t _o	from	to	from	to	from	to	(
DHA 1	-	-	-		-	_	0	20.3	-	-	20.30
DHA2	_	-	_	·	- ;	_	0	16.8	-	- :	16.80
DHB2		_	- '`* -	-	-	-	20.6	32.9	32.9	57.34	57.34
DHB 3	0	3.7	_	-	3.7	23.0	23.0	29.2	29.2	49.22	49.22
DHB4	0	3.8	•••	-	3.8	16.1	16.1	48.0	_	-	48.00
DHB5	- ,	-	-	-	0	21.5	21.5	47.29	-	-	47.29
DHB6	0	1.8	1.8	16.3	16.3	19.9	-	-	-	-	19.90
DHC1	0	2.0	_	-	-		2.0	38.6	38.6	41.65	41.65
DHC2	-	-	-	-	0	9.9	9.9	35.57	-	_	35.57
DHC3	-	_	_	-	0	29.0	29.0	50.35	-	-	50.35
DHC4	0	3.4	-	-	3.4	33.5	33.5	47.19	-	-	47.19
DHC5	-	-	-	-	0	40.15	-	-	-	-	40.15
DHC6	-	_	0	32.2	· - ,	-		_	-	· -	32.20
DHD2	0	1.5	-	-			1.5	33.0	33.0	43.7	43.70
DHD3	0	2.5	-	-	-	444	2.5	36.5	36.5	44.9	44.90
DHD4	0	1.9	-	-	-	_	_	_	1.9	44.7	44.70
DHD5	0	1.6	1.6	10.0	10.0	30.7	30.7	35.0	35.0	41.19	41.19
DHE 1	0	2.0	-	-	-	_	-	-	2.0	50.7	50.70
DHE2	0	1.2	_	-	-		-	-	1.2	49.5	49.50
DHE3	0	1.4	_		-	_	1.4	12.0	12.0	48.7	48.70
DHE4	0	2.6	-	-	-		_	_	2.6	34.65	34.65
DHE5	0	1.6	1.6	35.5	35.5	44.08	- -	-	-	-	44.08

Drillhole locations for previous drilling programmes are also shown on Plan No. G143 and results have been incorporated in the cross-sections on Plan No. G144a and No. G144b.

Drilling results are in general accord with those obtained in previous drilling programmes.

Core samples were submitted for alumina determination. Intervals sampled are shown on geological logs in Appendix A and chemical analyses quoted on a dried basis are presented in Appendix B.

Origin of white clay-shale

The white clay-shales are residual kaolinitic rocks developed in the cycle of deep weathering which took place in the Tertiary period now believed to be of late Eocene to Oligocene age.

Hiern (1974) suggests that metasomatic processes possibly of lower Palaeozoic age have been active as well as the Tertiary weathering cycle. This suggestion is based on the presence of thin veins of kaolinitic material which cut across bedding in the clay-shale. In addition, Hiern (op. cit.) suggests that due to proximity of the pits to the Adelaidean-Cambrian unconformity, kaolinisation may be related to this feature.

Drilling results demonstrate that white clay-shale has uneven but definite lower limit and is underlain by relatively less altered rocks. This indicates alteration resulted entirely from the deep weathering event.

The association of highest quality white kaolinite with the structural high rimming the saucer shaped depression suggests that the degree of alteration is not only controlled by original lithological composition but also tectonic features forming structural traps which influenced circulation of groundwater.

Thin discordant kaolinite veinlets developed similarly in joints and tension cracks which also behaved as structural traps.

PRODUCT QUALITY

Fireclay

White and pale coloured non-plastic clay with low silt content is utilised as aluminous fireclay. A total of 281 unpublished quality control chemical analysis quoted on a calcined basis are summarised in Table D and have been used to construct the compositional field diagram shown on plan No. S27.

Table D: Birdwood clay and silica quarry - Summary of Chemical Data.

Calcined	Range (per	Average		
Basis	from	to	(Per cent)	
SiO ₂	49.9	74.80	58.00	
A1203	18.00	46.20	37.00	
Fe ₂ 0 ₃	0.10	7.40	1.50	
TiO ₂	0.10	3.00	1.50	
Ca0	0.05	0.55	0.15	

Results of refractoriness determinations are summarised in Table E.

Table E: Birdwood Clay and Silica Quarry - Summary of Refractoriness

Determinations.

Character	No. of	Ran	ge	Average	
onaracter	Determinations	from	to		
Softening Point OC	210	1410	1770	1710	
Fusion Point ^O C	198	1425	1780	1730	

The fireclay fires white to off-white colour.

Impurities include limonite nodules which produce iron spotting on firing affecting the appearance of bricks and should be avoided for high quality products.

Abnormally high vanadium content may produce a green staining on fired ware.

White Clay

White clay below fireclay alumina specification is utilised by the South Australian Portland Cement Co. Ltd. as a whitening additive in the manufacture of white cement.

This material is also suitable for manufacture of cream coloured house bricks.

<u>Kaolin</u>

Two grades of silt free kaolin are selectively quarried according to colour. Top grade white colour (K_2) has a slight yellowish hue and second grade (K_1) is pale yellow-brown. The kaolin is milled by Jarvis Industries P/L for sale as industrial filler.

Minerallogically the material comprises mainly kaolinite with minor quartz, mica, tourmaline and pyrite.

Trial tests by R. Fowler Limited suggest the material is unsuitable for light ceramic purposes due to fine grain size.

Paper manufacturers state the material falls below paper grade colour specification due to slight yellowish hue.

Improved whiteness would achieve a wider market acceptance for the milled product. Investigation is recommended into methods of treatment to upgrade colour.

Calcined kaolin from Birdwood is being evaluated as an alternative to imported calcined clays.

Silica

Iron stained quartzite in the near surface zone is suitable only for road rubble and filling sand. Underlying clean quartzite is excavated for silica.

Refractory silica is used in manufacture of refractory bricks and ladle cement and other refractory applications.

Chemical analysis of a representative stockpile sample is presented in Table F.

Table F: Birdwood Clay and Silica Quarry - chemical analysis of silica sample.

	per cent
SiO ₂	98.45
Fe ₂ 0 ₃	0.29
A1 ₂ 0 ₃	0.44
TiO,	0.10
Ca0	0.05
Mg0	0.10
Na ₂ 0	0.03
к ₂ 0	0.34
roi	0.20
Total	100.00

Washed silica would be suitable for use in ceramic whiteware and glass manufacture. The feasibility of producing a range of glass, foundry and abrasive silica sand from the deposit should be investigated. In addition, evaluation as an industrial milled product is warranted.

ENVIRONMENTAL CONSIDERATIONS

Barrier mound construction and tree planting programmes are included in the quarry development plan to ensure future operations do not obtrude on the local landscape.

A larger settling pond and planned drainage facilities are required to minimise water pollution as well as allowing orderly quarry development.

Abandoned mine shafts are fenced.

Rubbish dumping should be formally prohibited.

QUARRY DEVELOPMENT PLAN

A plan for quarry development (plan No. G145) has been constructed based on geological, topographic and drilling data and incorporates environmental considerations.

The five stage plan enlarges the present quarry design, takes account of drainage, access and stockpile requirements and restricts visibility of the workings from the surrounding public roads.

Clay pit faces are 10 metres high and slope 50° and berms range from 3 metres to 10 metres wide as required. Quartzite pit faces are up to 16 metres high and slope 60° and berms range from 3 metres to 7 metres as required.

Barrier mounds should be constructed using waste material covered by soil and clay overburden material and then vegetated.

Installation of pumping facilities is required to maintain drainage of the quarry.

An improved settling pond is required to prevent water pollution.

On completion of extraction, a hole 450 metres long by 410 metres wide and up to 50 metres deep remains. Possible after uses for the excavation include either an ornamental lake or a sporting arena.

RESERVES

Reserve calculations are based on the quarry outlines shown on the quarry development plan No. G145, geological limits shown on the geological plan No. G143 and cross-sections on plan No. G144a and No. G144b and using an SG of 2.0 for both quartzite and clay.

Drilling results alone are unreliable for subdivision of the white clay-shale into fireclay, white clay and kaolin. Therefore, for the purpose of reserve calculations the white clay-shale is estimated to contain 30 per cent fireclay, 60 per cent white clay and 10 per cent kaolin.

Quantities of usable raw material as well as overburden and waste materials are detailed in Table G.

These indicates reserves figures show that production of silica should exceed production of clay to enable orderly quarry development. Thus additional outlets for silica are required.

Table G: Birdwood clay and silica quarry - Indicated Reserves

Stage No. (see plan No. G145)	Over- burden	Waste	Silica and Quartzite	Fireclay	White Clay	Kaolin	Total
1 (present stockpile)	500	50,000	6,000	2,500	_	200	59,200
2	5,000	15,000	40,000	40,000	80,000	13,000	193,000
3	10,000	40,000	200,000	105,000	210,000	35,000	600,000
4	25,000	100,000	1,000,000	600,000	1,200,000	200,000	3,125,000
5	75,000	300,000	3,000,000	420,000	840,000	140,000	4,775,000
Total	115,500	505,000	4,246,000	1,167,500	2,330,000	388,200	8,752,200

SUMMARY AND CONCLUSIONS

Birdwood clay and silica quarry is excavated in altered argillite and quartzite of the Saddleworth Formation (Burra Group) of Adelaidean age.

Alteration of argillite to kaolinitic white clay-shale by deep weathering processes took place during the Tertiary period. The degree of alteration is controlled by original lithological composition and tectonic features which influenced groundwater circulation.

Quarry products are aluminous fireclay for refractory bricks, white clay for white cement, two grades of kaolin for industrial filler, silica for refractory products and rubble for road construction.

From 1971 to 30 June 1975 recorded production totals 35,555 tonnes of white clay-shale and 30,635 tonnes of decomposed quartzite.

A core drilling programme of 22 holes totalling 908.08 metres combined with geological mapping provide a basis for defining quarry limits. Within a proposed quarry development plan based on extension of the present quarry design, indicated reserves of 3.89 million tonnes of white clay-shale and 4.25 million tonnes of decomposed quartzite are available.

Quarry development requires barrier mound construction and tree planting programme, an enlarged settling pond and installation of pumping facilities.

Investigations are required into treatment methods to improve kaolin whiteness and into expansion of silica outlets.

Douglas Nichol

uglas Michol

Geologist

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APPENDIX A

Explanatory Notes and Logs of Drillholes

APPENDTX A

EXPLANATORY NOTES AND LOGS OF DRILLHOLES

DRILLING PROCEDURES

Equipment

A truck-mounted Pioneer type 160 drilling machine was used.

All core was drilled size NMLC, nominal diameter 5 centimetres. "M" type stationary inner tube core barrels were used fitted with bottom discharge bits and split inner tubes.

Storing and marking of core

Cores were stored in galvanised iron trays. The boxes were marked with consecutive compartment numbers. Drilled depths from the surface, in metres, were marked on wooden blocks which were placed in the compartments. The core was boxed in this manner at the drill site being placed in its appropriate place in the box as soon as it was extracted from the core barrel.

Cores were later split, sampled, logged, reboxed in wooden trays and stored at the Department of Mines, Drilling and Mechanical Branch, Dalgleish Street Thebarton, South Australia, where they are available for inspection.

Notes on Diamond Drill log sheets

The logs have been plotted on a vertical scale of one centimetre = one metre (1:100).

The descriptions given on the log sheet refer only to materials recovered as core. Core may be lost by being ground or washed away during the drilling process; it may usually be inferred that such material was relatively weak but this cannot always be assumed since even solid rock can be ground away and lost under some conditions.

To the left of the graphic log is a geological description of the materials sampled. This includes:-

```
Geological age )
Rock Unit name )
```

Nature and type of material.

B.W. sample numbers (e.g. BW88/75) shown on the column headed "Structures" on the logs refers to alumina assays presented in Appendix B.

FEA	LOG OF DIAM	OND PLAI COO	DRII N REI	ference G143 Ates —	•		
AGE		1-7	DEPTH		2 % 39	S IX	EPI mi
	No core recevered				- 0-		
	Clay, white, slightly silty. Altered schist.	2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1					_+_
	No core recovered		2-			Ħ	
	Clay , white , slightly silty . Altered schist.	ninininininininininininininininininini	3-				3 4
	No core recovered.						
	Clay, white, slightly silty. Altered schist.	הושומושוט לשומומושוט ליוחוחוחוט	· · · · · · · · · · · · · · · · · · ·				7
رەبر	No core recovered.	ומומותו מומותותו מומותותותו	9_				\$ 9
EAN DRMATI	Clay, white, slightly silty. Altered schist	אומומות מומומות מומומות מומומות	- Io-			E	10
Aid	Clay, white and yellow-brown, sitty. Altered schist	5 5 5 5 2 5	11-			-1	H
A DEL	No core receivered Clay, while, slightly silty. Altered schist.	# W W W W W W W W W	<u>.</u>				12
\$	No core recovered		4			-1	IS"
	Clay, white, alightly silty. Altered schist,	1/2 1/2	ц- 17-	foliation at 30° 5 core axis			
	No core recovered.		18			18	3
	clay, white, slightly filty. Altered schist		19			_1"	19
Dr.	MARKS END OF HOLE 20-3 METRES			RAW MATERIALS DIVISION			-
	MARHS			DRILL Nº SUU 415 LOGGE TYPE Pionert 160 D. I DRILLER W.T. Trestrail DRAWN START: 18-8-75 TRACE HNISH 19-8-75 CHECK	OHOIN C. N D. A	٧	

NEWBOLD GENERAL REPRACTORIES LT. LOG OF DIAMOND DRILL HOLE

HOLE NO DHAZ SERIAL No. -...

COORDINATES

FEATURE: Birdioged Clay Querry COORDINATES -LOCATION Section 4397. Hundred of Talungs ANGLE FROM HORIZ 90° DIRECTION -

L III	description of core	POJ	DEPTH	STAUCTURES	Sold ni
2	No core recovered Clay, white Albered schiet	ভালালালালালালালালালালালালালালালালালালাল	* 1	banding at 45° to core axis	
	No core resources Clay, while, kaolinile: Altered schief	યોળીઓયોગો બીગો યોગ કોર્યોથી થો યોગો સીચો બીબીનો યોગો ગોગો યોગ	+ + + + + + + + + + + + + + + + + + + +		-4
FORMATION	No core recovered Clay white kaolinite: Altered schist	े गित्रिका जानी जी			-5 -6 -7
SADDAE BORTH	Clay white Albred schist	\[\text{\tin\text{\texi\tin\tint{\text{\text{\texi}\text{\text{\text{\text{\text{\texi}\text{\text{\texi}\text{\text{\texi}\text{\texi}\text{\texi}\text{\texi}\text{\texi}\text{\text{\texi}\text{\text{\texi}\t	9-	banding at 45° is core axis	-8 -9 -10
	No core recevered	भागाना जाना जाता । भागाना जाना जाता जाता जाता जाता जाता जाता ज	// /2 /3		-/2 -/3
	No core recovered Clay: white, slightly silty. Altered schief.	वार्याची प्राप्ता जावार्याची वार्याची जावार्याची वार्याची	19		
	END OF HOLE 16.8 METES		77		
Ĺ	And the second of the second o	1853	-	PAW MATERIALS DIVISION	

DRILL Nº SUN HIS LOGGED TYPE . Pronger 160 D. NICHOL .. DRILLEY, W.T. Trashail DPIAWN .. DN. .. STANT: 19-8-75. THACED. DV.
FINISH. 29-8-75. CHECKED...
SHEET 1. OF. 1. DPG N°.

NEWBOLD GENERAL REFRACTORIES LT. HOLE NO DHE 2 LOG OF DIAMOND DRILL HOLE SEPHAL NO PROJECT S. A. Clay Deposits. PLAN REFERENCE 4143 FEATURE BIRGWOOD Clay Deposits COORDINATES LOCATION Section 6397, Hundred of Talyinga ANGLE FROM HONIZ 90° DIRECTION. DESCRIPTION OF CORE STAUCTURES Clay white. Altered echiet Clay white Altered schiel 275 No. core recovered 8 ٩. 11.. 12 ß. 14. Sandstone, pale brown and had brown 16 No core recovered 16 17 Sand and Clay off white and pink 18. 18 No some necovered 19_ PAN MATERIALS DIVISION Pemarks Drick No. 544.415 Logged..... Type Pioneer 160 J.H. Callender DHILLER WITTHESTALL DRAWN. D.N ... 5TANT, 23 - 2: 74 THACED ... FINISH 1-3-74. CHECHED. SHEET I OF 8 DAG NO

NEWBOLD GENERAL REFRACTORIES LT

HOLE NO DHB 2

- LOG OF DIAMOND DRILL HOLE

PROJECT S.A. Clay Deposite.

PLAN REFERENCE

FEATURE BIRDWOOD Clay Deposit

COORDINATES

LOCATION Section 6397, hundred of Talunga ANGLE FROM HORIZ 90° DIRECTION -

DESCRIPTION OF CORE :	Log	DEPTH	STAUCTURES	80	ੰ 3
No core recovered	71.				
Clay off-white, Altered schist,	18181818 81816181 191819181	21			
	8 6 18 18 18 18 18 18 18 18 18 18 18 18 18	22			
No core recovered	3 6 3	1 - 7			П
		, 23			
Clay, off-white, silty, Altered schist.	5 S 5 S	24			
	S S S	25			
	55	26			
Clay. off-white, silty. Altered Schist.	55 S	27.	**************************************		F
No cone recovered:		28	ugastis di Tanggar		
V		1 4			
Transfer of the second of the	1333 1333 1334	29	K., in the second		
Clay, off-white, silty. Altered schiet	5 5	30-			
A SIGNATURE OF THE STATE OF THE	5 5 5 6 5 5 5 5	31			
3	*	1			
AAA	\$ 5 \$ 5 \$ \$	3.7			1
Clay, greyand pale brown, silty Altered schie	65 55	33			+
Schiet grey, pyritous,	ss	3,			
No care		123.72			L
Schiet, grey.	\$ 5 \$ \$	35			
	8 s	36			1
Schiet, pale grey, siliceous, pyritous	55 5 65	37	•		
	SS S		Foliation at 90° to core a	¥15	
	55 55 25 25 25 25 25 35	38			1
	SS Se	39			
Canada San San San San San San San San San Sa	ss	, Mo.			

DRILL Na Sun 415 LOGGED TYPE Honeer 160. J.H Callender DRILLER W.T. Trectail. DRAWN D.N. STANT, 23-2-74 THACED.

CHECHED ANISH 1- 3 -74.

2 OF 3 . DrgAN.

NEWBOLD GENERAL REFRACTORIES LT. LOG OF DIAMOND DRILL HOLE

HOLE NO DHB 2 SERIAL NO

PROJECT S.A. Clay Deposits. PLAN REFERENCE G143
FEATURE Dindwood Clay Deposit COORDINATES. -LOCATION Section, 6397, hundred of Talunga ANGLE FROM HORIZ 900 DIRECTION

ENS LIND	description of core	LOG	DED]H	STHUCTURES	3 3 7
	ichist, pale grey siliceous, pyritous	5 5 5 5 5 5		*	
		\$ >	• 141-		
		S S	42		
		S S S S S S S S S S S S S S S S S S S	43		
		5 S 5 S	44		
		5 5 5	<i>1</i> ,15,		
		8 ₅ 6 8 ₅ 6	46		
TION		SS			
12 2		5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	718		
FORMA		\$ 5 5 6	-		
LEWORTH		\$ S	49.		
JOR		"S" S S	50.	7	s
ADDKEWORTH		δ S S S	61_		5
SAD		S S	52-		-5
		55 55 55 55	. 63		_5
		\$ \$ \$ \$ \$ \$	54		5
			55		
		\$ 5 \$ 5 \$ 5 \$ 5 \$ 5 \$ 5 \$ 5 \$ 5 \$ 5 \$ 5	.±		
		SS SS			
		s ^S s	<i>ទ</i> ា	i.	
	End of Hole 57.34 metres	77:3	58.		
			-		
				BAW MATERIALS DIVISION	
Pen	ARMS.			TYPE PIONEER 160 O. H. DAILLER W.T. Trestail DRI	GED. Callender

L NO	DESCRIPTION OF CORE	0	DEPTH :	STHUCTURES	Selling.
	No cone recovered.				
			2		
4	Conglomecate, brown.	000	3-		
	Sandstone, pale brown, friable		4		
			5		
			1		
47107			8_		
FORM	Sandstone white, friable		194		
7			io.		
NOW.			1.14		
SADDLER			12		
Š			13		
			"	Andrews (1996) Andrews (1996) Andrews (1996)	
			15	Andrewski († 1947) 1908 - Paris Maria, de Santonia 1908 - Paris Maria, de Santonia	
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			16-	ere de la companya d La companya de la companya de	
			19-		
1.		<u> 15.54</u>	20	AW MATERIALS DIVISIO)N

NEWBOLD GENERAL REFRACTORIES LT LOG OF DIAMOND DRILL HOLE

HOLE NO. PHB3 SERIAL No. . . .

PROJECT S.A. Clay Deposits. PLAN REFERENCE G143
FEATURE BINDWOOD Clay Deposits. COORDINATES -

START: 2-3-74 ... THACED ... ANISH 14-3-74 CHECHED.

ไปฟต	description of core	LOG	DEPTH	STHUCTURES	5 8	S	DE I
	Sandatone, white, finable		2).				
		130	22				2
	No cone recovered,		23				-2
	Clay, off-white, slightly silty, Altened schiet.	5 S 5 S 5 S 5 S	24-				
	No core recovered,		214				
	Clay, off.white, slightly silty, Altered schist,	8 5 5 5 5 5 5					
	No. come recovered,		28				
אַסוּ	Clay, off-white, slightly silty. Altered schist. Clay, off-White, Altered Schist.	\$ 5 5 \$ 5 5 \$ 5 5	7				-:
FORMA	Schist, grey, pýritous	\$ 5 \$ 5	3 2				-;
Ē		. ∣°sື	31				-
しにいのえてか		5 S 3 S 5 S	32				ŀ
SADD		S S S	33				-
		8 S 5 S 5 S	. 34				4
			35				_:
		S S S S S S S S S S S S S S S S S S S	36				ŀ
			37	V			
		5 5 5 5	38				
		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	39	L_{z}			
		<u> </u>	40	RAW MATERIALS DIVISION	[_] N		L
£	Marks. 1			DRILL Nº SHU 415 LOX TYPE Planeer 160 S.H	GED.		

PP	NEWBOLD GE LOG OF DIA OJECT S.A. Clay Deposits	1 DNOMA)RILL REFE	HOLE SERIALI RENCE G143	10. D H B	3.
FE	ATURE. Bindwood Clay. Deposits CATION Section: 6397, hundred of To	COOR	DINAT	E5.,	N	
AGE	description of core	LOGI	EPTH	STAUCTURES	CASING CASING	EP] m
RDELAIDEAN	Schist. grey.pynitous	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	41 42 45 44 45			
		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$	41-			-46 -48
	End of Hole 49.22 metres		50			
P.E	MARKS.		D T O S	MATERIALS DIVISION RILL No SULL HIS. LOCK YPE PROCES IND. J.H. MILLER W.T. Trestail. DIPA TART 2-3-74. TRA NISH 14-3:74. CHE	GED Callende WND CED CHED	

HOLE NODHG

NEWBOLD GENERAL REFRACTORIES LT

LOG OF DIAMOND DRILL HOLE

PROJECT 5.A Clay Deposits PLAN REFERENCE 6143

FEATURE BIRDWOOD Clay Pit COORDINATES LOCATION Section 6397, hundred of Talungungle From Horiz 90° DIRECTION

DESCRIPTION OF CORE	LOG	DEPTH m.	STAUCTURES	39 3 39 3
Clay brown. Soil units and materials within the soil profile.	010101010	j r		
Clay red, sandy. Altered schist	SS	2-		
	5 5 5 8 5	3-		
Sandatone, off-white and pale brown.		4- 5-		
		,		
		8- 9-		
#110w		10		
Pokuli in the control of the control		1		
Clay . white silty. Altered schist	\$ \$ \$	12-		
§ Sandatone, grey, course, grained,		13		
S S S S S S S S S S S S S S S S S S S		. 4		
		15_		
No Core recovered	SEE	77		
		18_		
Clay. off-white, silty. Altered schiet	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	19		
351448160			PAW MATERIALS DIVISION	N
remarks.	•		DRILL Nº SUU 415 LOC TYPE AGNER 160 J. DRILLER W.T. Trestail. DR.	H Callendo
			START: 14-3-74 TR MNISH 21-3-74 CH	

NEWBOLD GENERAL REFRACTORIES CO LOG OF DIAMOND DRILL HOLE

HOLE NO DHB4

PLAN REFERENCE

PROJECT S.A. Clay Deposits
FEATURE BIRDWOOD Clay Pit

	. بيوا	,	-41 1L	A 2. C	-	Serve No.	4 945	-	675	Trans.	ч.	7.3	100	100					1. 1		~~	70			3.1				200	0.00		ought in				·		
		2751					A		200	100	10													دنداه			A		2000		_ 0		444	30000	TICH			
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1	IX	Α.	ION	 ec	. 1	on		•	11		I LA		1.5	·U		- 250	-	•	- 4	1100	211	u.	-	1 1		11	\neg	3 110	14.0		₹		331.	-	1101	ч.	1.0	
l i	~~~	800				100				100	part and	132.7	V 1.13			1.3	800			1.00			3000	er comi	: 10 P	-5.			A. O. A		.00	1000	1000	1.000				

description of core	LOG	DEPTH	STRUCTURES	
Clay off. white silty. Altered Schist.	5 5 6 5 5 5 5 5	21		
No gare recovered.		22,		
Clay pale brown, silty, Altered Schist	5 S 5 S 5 S	23		
Schist. grey, pyritous	5 S 5 S	25		
	5 5 5 5 5 5	26	-1	
	\$ \$ \$ \$	21-		
	\$ \$ \$ \$ \$ \$ \$ \$	28		
	SSS	30		
	3 S 5 S 5 S 5 S	31.		
Clay. grey-brown, Altered schiet.	s s	32.		
And the second of the second o	\$ 5 5 5 5 5 5	. 33		
	\$ \$ \$ \$	34 35		
Clay, white. Altered schist	\$ S \$ S \$ \$ \$		BU 8875	
No core resourced.		<i>3</i> 7		
		38		
Clay, off-white silty. Altered Schiet. No fore recovered	\$25			
Clay, pale grey, silty. Altered echiet	1432	40	BW 89/75 RAW MATERIALS DIVISION	+++

TYPEPioneer 160 DRILLEAW.T. Trestoil STANT 14-3-74

J. H Callender DMAWN D.N.

THACLE CHECHED

ANISH 21-3-74 DAG No.

NEWBOLD GENERAL REFRACTORIES LOS. LOG OF DIAMOND DRILL HOLE

HOLE NO DHB4

PLAN REFERENCE GIA3

PROJECT S.A. Clay Peposits. FEATURE BIRDWOOD Clay Pit.

- 2 2 2	DESCRIPTION OF COME	LOG	DEPTH	STAUCTURES	33	3	, T.
2	Clay pale grey suity. Altered schist	S-5 5-5 5-5		BN. 89/75			-
	Clay pale grey, Altered schist.	S-S-S-S-S-S-S-S-S-S-S-S-S-S-S-S-S-S-S-	AII	BW 90175			-
	Clay, off-white, silty. Altered schist	8 65	142=	BW 91/75			_
Č	No core recovered.		43				_
B E			44				
SORT			2,5	BW 92/75		Ц	
SABDLE	Clay. off-white, slightly silty. Altered schist	5-5 5-5 5-5	46	18 W 143 14			- -
*	No core recovered.		47				-
	Clay off-white, minor yellow storning	5.78	. 48	Bw 93 75			-
1.5							-
	End of Hole 48:00 HETRES		1.				-
*			"."-				-
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4 3.5	$\mathbf{r}_{ij} = \mathbf{r}_{ij} + \mathbf{r}$	L.	×				1
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				t statement of the contract of			
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LOCIGED. TYPE Pioneer 160 J.H. Callender DRILLER W.T. Trestail DRIAWN D.N

J. H. Callender THACLE ...

START 14-3-74

ATURE BIRDWOOD Clay Pit. CATION Section 6397, hundred of Tolung	Jakino		only 1900 man in the second	2500 2500 2500 2500 2500 2500 2500 2500
DESCRIPTION OF CORE	LOG	DEPTH m.	STAUCTURES	393
No core recovered.		1 -		
Quartzite, grey, sandy.		2		
Sandstone. grey and pale orange- brown, friable, course- to fine-grained.		3		
		5_		
		8		
ORMA Trook	7, 2, 2, 3	Q		
Ewokith F				
-3-7-7-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1		12		
		4		**
		15_		
		17		
No core recovered.		18		
Quantitie, off white sandy	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1, 19		ON IS
REMARKS.			PAW MATERIALS DIVISION DRILL Nº S. H.H 415. LOG	

HOLE NO DHB 5 NEWBOLD GENERAL REFRACTORIES LT. SERIAL NO. LOG OF DIAMOND DRILL HOLE PLAN REFERENCE 443 PROJECT S.A. Clay Deposit FEATURE BIRDWOOD Clay At. COORDINATES LOCATION Section 6397. hundred of Talunguangle From Horiz 90° DIRECTION DEPTH stauctures DESCRIPTION OF CORE LOG Quartzite off-white sandy No core recovered S = 5 Clay, off-white, silty. Altered schist, No core recovered 24 5 5 5 5 - 5 BW 49 75 Clay, white, Altered schist. No core recovered 26 Schiat , yellow-brown, sand y, decomposed. 28 No core recovered <u>5 5 5</u> Clay off white and pale brown, silty Foliation at 80° to core axis 3 S S Altered schiet No core recovered. 30 30 31 Clay white, Altered schist. BW 50/75 32 32 No core recovered. 33 53 <u>Clay</u> white, Altered schiet. BW 51 75 52 75 Clay, white, Altered schist, 35 Clay, white, Altered achist, BW 53 75 Clay. off-white and grey. Altered schiet. 36 No core recovered 37 37 31. Clay off-white, silty : Altered schist S 78 BW 55 75 Clay, off-white sandy. Altered schist No core recovered Clay, white, Altered schist B.W 56175 BAW MATERIALS DIVISION REMARKS. DRILL NO SUN, HIS LOGGED ... TYPE Planeer 160 D. Nichol DRILLEANT. Trestail DRAWN. D.N. STANT: 22: 3- 14 ... THACED ... ANISH . 29 - 3 - 74 CHECHED. SHEET 2 OF 3 DRG No.

NEWBOLD GENERAL REFRACTORIES LTD.

LOG OF DIAMOND DRILL HOLE

HOLE NO DHB 5 SEPIAL NO.

PROJECT 5. A. Clay Deposits PLAN REFERENCE 643
FEATURE BINDWOOD Clay Pit. COORDINATES LOCATION Section 6397, hundred of Talunga, ANGLE FROM HORIZ 90° DIRECTION. -

T N O	DESCRIPTION OF CORE	LOG	DEPTH m.	STAUCTURES	39	\$ 1.00 P
	Clay. off-white, yellow and red . Altered . schist.	55		foliation at 75° to core axis		
ſ	No come recovered		41			
>		1977 1977	42			
31/6		\$	* **			
FOR		\$ 5 S	43-			_
` }	Clay off-white, sitty, Altered schiet Clay, white, Altered schiet	2 5 5 2 5 5		B W 51 15		_
SORY	No core recovered.					
DRE	Clay, white, silty. Altered schist,	5-5	45	<u>ገ</u> ያ, ຟ. 58 ነገኝ		
282			46			
ill 25 Mai						
	Clay, white, silty. Altered schist.	\$-\$ 3 8 3	47-	B W. 59/75		
			4,8			
	End of Hole 47.29 metres					
			. · -			
Š P)			
		102.55				
		1.0	1000			
		,	i i i T			
		15.75				
			*** <u>-</u> -			
Jan. 1947.	Comparison Section States of the late.		1-			ŀ
			14.7			ĺ
	A STATE OF THE STA	1.7	# · -			
		17%	-			
		1	13.			
1."		1 7 4 7	1 -4-50		Ш	L

DRILL No Sun 415 LOGGED. Type Rioneer 160 D. Nichol DRILLER W.T. Trestail . DRAWN D.N .. STANT -22-3-74 THACED

FINISH 29-3-74 ...

NÉWBOLD GENERAL REFRACTORIES LT. LOG OF DIAMOND DRILL HOLE

HOLE NO DHB 6 SEPHAL NO.

PROJECT S.A. Clay Deposits ... FEATURE BIRDWOOD Clay Pit.

PLAN REFERENCE . 443

COORDINATES -

LINO	description of core	LOG	DEPTH m.	STAUCTURES	Sing	(4) 13
	Clay, brown. Soil units and materials within the soil profile	01010101	• •			- ·
SA	Schist, grey, decomposed,	\$ 5 \$ 5 \$ 5	2=			- ;
	No core recovered		4			
	Schist, grey, decomposed.	\$ \$ \$ \$ \$ \$ \$ \$	5	foliation at 30° to core axis		_
	No care recovered		7-			_
	Schist, grey, decomposed,	5 5 5 5 5 5 5 5 5 5	9	foliation at 20° to some axis.		
	No cone necovered.	33	/o			-
	Schist, grey decomposed.	\$ 5 \$ 5 \$ 5	12-		-	-
	No core recovered.		13			-
	Schist, grey decomposed.	\$ 5 6 5	14	foliation at 20° to core axis		-
	No core recovered:		15 -			-
			16-			-
	Quantzite, grey, hand.		,,,			-
			18-			-
	No core recovered		A			-
	Quartete, grey, hard.	1778	_20			_
	MARKS. End of Hole 19.90 metres			PRAW MATERIALS DIVISION DRILL NO SUU 415 LOGGED. TYPE Proneer 160 D. Nichol DRILLER W.T. Trestail DRAWN D. N START 29-4-74 TRACED.		
ጎ E	MARKS. Lad of Mole 19.40 Merres					

ANISH 31 - 4 - 74 CHECHED

HOLE NO DHC I SEPHAL NO.

PLAN REFERENCE G143

PROJECT S.A. Clay Deposits

PLAN REFERENCE G143

FEATURE Birdwood Clay Pt COORDINATES.

LOCATION Section 6397, hundred of Talunga ANGLE FROM HORIZ 90° DIRECTION

DRILL No SULL 415 LOGGED. TYPE Proneer 160 . D. Nichol ... DRILLER WT Trestail DRAWN D.N. START ... IN-7-74 ... TRACED ... ANISH . 11 - 8 - 14 .. CHECKED . SHEET 1 OF 3 DAG No

F CORE LOC	DEPTH	structures	3 3 8
and materials 5° profile.	10101		
the contract of the contract o	2012 N. S. (1982)		+
lened schiets s-5 s-5 s-5	\$ \$ \$	B.W 74/13 Foliation at 20° to come ams	
	5151	BW 75/75	
Tire red schief.		BW 76/75 Foliation at 20° to core as	S
tered schiet.	<u>s</u> 7—	B W 77/75	
	s 9 s 3	BW 78/78	
	-		
- 5 4 1 8 1 8 1 8 1	\$ 12_ \$	BW 79/76	
	1 1		
	3 1a-	BW 80/75	
. Altered schist &	S 19	ß ሠ- 8ι 75 °	
	20		الكافلات
	and materials profile. ered schist: Salatered schist: Altered schist:	and materials or o	and materials profile.

HOLE NO DHC 1

PROJECT S.A. Clay Deposits.

PLAN REFERENCE G143

ANISH . 11 - 8 - 74

SHEET 2 OF 3 DRG No.

CHECHED.

FEATURE BIRDWOOD Clay Pit. COORDINATES -LOCATION Section 6397, hundred of Talunga, ANGLE FROM HORIZ 90° DIRECTION log | Depth DESCRIPTION OF CORE STHUCTURES BW 82/75 Clay off-white, silty. Altered schist. 5 5 5 BW 83175 Clay off-white, silty. Altered schist. 22 22 No core recovered. Cby, off-white, silty. Altered schiet No core recovered Clay. off-white, silty. Altered schiet. 5-35 24 24. No core recovered. 25 25 26 26 27 BW 84/75 <u>Clay</u> off-white, silty. Altered schiet. 28 28 No core recovered. 29 29 BW 85/75 Clay, off-white, filty. Altered schiet. 30 31 . اگ No core necovered. 32 32 5 - S - S -- S -83 23 Clay off-white, silty. Altered schiet. BW 86/75 34 34 35 No core recovered. 36 Clay, off-white, silty. Altered schist. BW 87/75 37_ 37 38-38 Schiet gray, decomposed. Foliation at 30° to core axis. 39 39 No core recovered. RAW MATERIALS DIVISION REMARKS. DRILL Nº : \$44 415. LOGGED TYPE Ploneer 160. D. Nichol DRILLEAW.T. Trestail DRAWN D. N. STANT: 14: 7. . 74 . THACED. . . .

NEWBOLL GENERAL PIEFMACTORIES LTD.

LOG OF DIAMOND DRILL HOLE

HOLE NO DHC !

PHOJECT S.A. Clay Deposits.

PLAN REFERENCE ;

ANISH 11- 8 - 74

SHEET 3 OF 3 DAG No.

CHECHEL

COORDINATES

LOCATION Section 6397, hundred of Talunga, ANGLE FROM HORIZ 90° DIRECTION rod | Depih STRUCTURES DESCRIPTION OF COKE No core recovered. 41 End of Hole 41.65 metres BAW MATERIALS DIVISION REMARING DRILL NO SUU 415 LOCKED. TYPE Planeer 160 D Nichol Driller, W. TTrestail I PIAWN D. N. 5TAPIT 4-7-74

HOLE NO PHC 2

PROJECT S.A. Clay Deposits. PLAN REFERENCE 6143

FEATURE Birdwood Clay Pit. COORDINATES - LOCATION Section 6397, hundred of Talunga. ANGLE FROM HORIZ 900 DIRECTION

DESCRIPTION OF CORE		DEPT	STAUCTURES	393
Duantzite, grey.	2.0			
No cons recovered.		.]		
	(2.76)	-2=		
Quartzite, grey.		_		
No core recovered.		3-		
Muarizite anew		4		
No core recovered.	645	5		
Sandstone grey-brown, medium - to				
fine-grained.		6		
		-	() : () : () : () : () : () : () : () : () : () : () : () : () : () : () : () : () : () : (() : (
		.		111
		8_	(1)	111
		0		
		٩_		
Buantzite, arcy Clay off-white. Altered echist	5.5	19	BU 60/76	+++
No core recovered				
Clay off-white, Altered schist	\$ -5 - 5 - S	- 11	BW 61/75	11
Clay off-white. Altered schist	535	12	ชิม 62/75	1
No core recovered.				
	\$-5	13-	Bu 63)75	
Clay. off. white . Hitered scriet	5-5			
Clay off white Altered schiet	5 - 5	14	BW 64/75	
Ciay. on white.	5 5			
Clay. off-white Altered schist.	6-S	15	BW 65/75	
	283			
Clay, off-white. Altered schist	5 5		BW 66/75	
	645	η_		
Clay off-white. Aftered schist.	5 - S		BW 67/75	
Clay off-white. Altered schist.	-2-		BW 68/75	
	8141818	-		
	6.5	19-		
No core recovered		20		
			MAN MATERIALS DIVISION	
MARKS.			DRILL NO SUN 415 LOGGE	D
			TYPE Pioneer 160 D. Nie	
			DRILLER W.T. Trestail DRAWN	
요 하는 사람들은 사람들은 사람들이 되었다. 그는 사람들은 사람들은 사람들은 사람들이 되었다. 			STANT 6-7-74 THACE	
그 그는 그리고 있는 아들은 이 가 이 바다 그리고 있는 것이 하셨다.		1.0	ANISH 12-7-74 CHECK	

HOLE NO D HC2

PROJECT 5. A Clay Deposits.

PLAN REFERENCE G143

FEATURE BINDWOOD Clay Pit. COORDINATES —
LOCATION Section 6391, hundred of Talungaangle From Horiz 90° DIRECTION. —

L NO	description of core	LOG	DEPTH	STAUCTURES	39 S	n
Ĭ		- 3=				-
	Clay, off-whole and yellow. Altered Schiet	5 55	. 21	BW 69 75 "		-2
		5 - S	00			-2
	No core recovered.		22-			[^
			23			-2
	Clay off-white, slightly silty . Altered Schist.	375		BW 70/75 *		-
	Clay grey, sulty - Altered schist.	\$ -5 8 - 5 - 8	24-	BW'71/75		[
	The Control of the Co	\$ 3.5	25			-
		8 - 5	ا م			!
		\$ = 5 = 5	26-			1
	A CANADA STATE OF STA	\$ - S	27			-
	Alleger to the second of the s	= 3 s = s	28_			
O		3 - 6	**-			
80	Clay. Oney, silty. Altened achist.	3 - 5	29	BW 72/75		
FOA	and the state of the second	4 5 6	20			+.
3	tager and the state of the stat	3 - 5	30.			1
067		1 = S	3 1			-
7		4 - 5 - 6 2 5 5	32			<u> </u>
AB	No cone recovered:		<u> </u>			Ī
S	Clay, pale grey, silty, Altered schiet.	\$ - \$ \$ - \$	33-	BW 73/75		-
1		3 - 3 - S	 			L
		3 = S = S	34			
		3 - 5	35			L
+		2.5 \$	3L		\vdash	t
	End of Hole 33.57 metres	, 100	3.			
			37_			+
			39			
	And the second second					F
			37			-
			40			<u></u>
١	A STATE OF THE STA	*	**************************************	RAW MATERIALS DIVISION		•

DRILL Nº "SUU 415 LOGGED TYPE Ploneer 160 D. Nichol DRILLER W.T. Trestail DRAWN DN. START 6-7-74 TRACED ...

ANISH 12-7-74 CHECHED HEET 2 OF 2 DPG No.

AGE	description of core	LOG	DEPTH m.	STAUCTURES	7,580.7 2,585.7	Selved m
	Sandstone, yellow-brown and red brown.					-1
	No core recovered.					-3
	Sand, arange-brown, medium-to fine- grained.					5
						_ _ 7 _ 8
DEAN COOMBINE			۹- ا نان-			- 19
ADELA!			112-			-11
			13			- 13 - - - - - -
			(- 17_			- 17
			18			- 18
Bi	SMARKS.		20	PAW MATERIALS DIVISION DRILL NO SUM 415. LOGG TYPE PRODUCT 160. D. NI DRILLEP W.T. Trestail DRAW START 29-3-74. THAC HNISH 2-4-74. CHEC	chol. VN. I ED):N.·.

DRILLER W.T. Trestail DRAWN D.N. STANT: 29- 3: 74 .. THACED FINISH . 2- 4 -74 CHECKED.

NEWBOLD GENERAL REFRACTORIES LT. LOG OF DIAMOND DRILL HOLE

HOLE NO DHC3

	Sand, grey and pale brown,		m_{\star}	sthuctures	33 33	CAENY	
		1111					
	coarse-to fine-grained.		21_				L
							-
			22_				ŀ
1		3.00					-
			23-				ļ
1			1 - 1				
1			24				I
1			٠,٤				
		12.5	25_				
	1921.45		26				
1							
1			27				
1							
		~	28				
\$			1				
ŗ.	No cont recovered	2 ~ 5	29			F	•
٤.	Clay, white. Altered echist. Clay, off-white, Altered echist.	- S - S		BW 42/75 BW 43/78		┝	•
٤		4 5 5	30_				
3	Clay, pale red-brown, sandy, Altered achiet	4 8	3.			T	•
20		4 g S					
3	Mixed Clay, sandstone and schiet, red brown.	\$ 5	32				
2 -	<u>Fernicrete</u>		1			L	
•	<u>Clay, off-white</u> , eilty. Altered schiet,	S ~S	33	BW 44/75			
1		\$ 5 \$ 5	, · -				
		\$ - S - S - S - S - S - S - S - S - S -	34				
1	Clay, grey, silty: Altered schiet.	\$ -5		BW 45/75			
1		- s	35				
		\$ -S	36				
		3 3					
1		5 - 5	37				
		233				H	•
1	No core recovered,	3.	38				
1	Clay, grey, silty. Altered schist.	5 55					
. 1	No core recovered.		39_				
Ĭ	And the state of t	4.3	40				
1		•	1 N	NAW MATERIALS DIVISION			•
E١	MARKS.			DRILL No. sun 415 LOGG	<u> </u>		-

HOLE NO DHC 3

PROJECT S.A. Clay Deposits.

FEATURE BIRdwood Clay Pit. LOCATION Section 6397, hundred of Talunga. PLAN REFERENCE GIA3

COORDINATES

ANGLE FROM HORIZ, 900 DIRECTION -

LNO	DESCRIPTION OF CORE	LOG	DEPTH m.	STAUCTURES	1887 1887 1887 1887
	No core recovered.		• 41		
	Clay, grey, silty. Altered schist.	5 6 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	42	B W 46175	
FORMATION		S 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1	44		
DLEWORTH	No core recovered.	3-3	46		
SADDLE	Clay, grey, sity, Altered achiet.	8-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5	47	BW 47/75	
S		5 8 5 5 5 5 5 5 5 5 5 5			
	No core recovered.		50		
and the same of th	End of Hole 50:36 metres		Sı		
- September - Sept			•		
de la companyament de la company			1		

DRILL No SUL 415 LOCIGED. D. Nichol TYPE Ploneer 160 DRILLER W.T. Trestail. DPIAWN DN.

START 29-3-74 THACED.

HOLE NO DHC 4

PROJECT S.A. Clay Deposits.

PLAN REFERENCE FRATURE BIRDWOOD Clay Ar.

COORDINATES
LOCATION Section 6397. hundred of Talunga. ANGLE FROM HORIZ 90°

PLAN REFERENCE 643

ヒろう	DESCRIPTION OF CORE	LOG	DEPT	STAUCTURES	100 ST.
	Sandy Clay, pale brown. Soil units and materials, within the soil profile.		377.1		
*	No core recovered.	17			
ſ			12 -		-
			3		
	Sandy Clay, pale brown regulith material	3:2:			
	No core resourced.	43 m² 15 m²	4		
			\$		
		1 (1 m)	L		
	Quartzite, pale yellow, sandy.			∤	
	No core recovered.	12 - 37 1	-		
	Quartaite, off-white.	335			
	No core recovered.		۹		
	Transport to the parties.		10		
	Quartzite, off-white, sandy.		u .	U.S. Sur	
	No core recovered.		12		
			75 7		
			(B)		
		122.33	-44		
1	Quartzite.grey No core recovered	1877	15		
1	Sandstone, off white, soft	10040000	301		
4	No core recovered.		16.		
-			17		
4	Quantzite, pink. No core recovered.	83.83	18_		
I	Quartaite, pink,	2537	7.0		
	· ·	237	9-		
l	No core recovered.	11	20	t Warner	
ار	MARNS			NAW MATERIALS DIVISION	
				DRILL No SUM HIS LOGGET TYPE Moneen 160. D. Nici	and the second second
1				DRILLEHW.T. Trestail DRAWN	D.N.
Si Si				STANT 27-4-74 THACEL	· · · · · · · · · · · · · · · · · · ·
			1,000	ANISH 3-5-74 CHECHE SHEET 1 OF 3. DRG No. 1	

HOLE NO DHC 4

PROJECT S.A. Clay Deposits.

FEATURE Birdwood Clay Pit: COORDINATES LOCATION Section 6397, hundred of Talunca ANGLE FROM LIGHT COORDINATES

LNO	DESCRIPTION OF CORE	LOG	DEPIT	STAUCTURES	13.0 3 9	SA CO	: 1
1	Quartaite, pink		79		- 0-3	۲	t
	No core recovered.	1,	. 21-			H	\vdash
	Quartide, pink.	*::::					F
	No care recovered		22_				F
		1	23-				
		1.					-
	Quartzite, pink.		24				F
	Na care recovered.		25				-
	Quantzite, pink.		علا				
	No come recovered.		27				
			28				<u> </u>
3							-
A 7.00	Quartzite, pink.		29-			L	<u> -</u> -
20			-مى				F
2	Sandatone, grey.ooft,		* 				F
SADDLECORTA			્ 3i -				-
Y A			32 -				_
240							-
	Quartzite, pink		- 33				
	No core recovered.	X X	- 34				
	Schist, pale brown, decomposed:	\$ 5 5		foliation at 70° to core axis			
1	No core recovered:		ුජ .				
	Clay, pale red brown, silty. Altered schiet.	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$	3 L-				,
		5553	37 .				_
	fernicrete-breccio						<u> </u>
			36				-3
			39				-
	Clay pale red-brown , eilty . Altered echiet.	5 5 5 6 5 5			+	1	
ľ		[.s]	40	RAW MATERIALS DIVISION			
١.	MARNS.						_
				DRILLING WALL 415 LOGGE TYPE Moneer 160 D. N. DRILLEH W.T. Trestail [PLAWN START 27-4:74 TRACE	ichol v D		J.

NEWBOLD GENERAL REFRACTORIES LTD.

LOG OF DIAMOND DRILL HOLE

FEATURE BIODWOOD Clay Pit. COORDINATES -

LOCATION Section 6397, hundred of Talunga. ANGLE FROM HORIZ , 90 DIRECTION -

SHEET S. OF 3

AGE	ピスラ	description of core	LOG	DEPT-	STAUCTURES	39 39	3	ic.
		Clay pale red-brown , silty . Altered schist.	6 6	• 41				-4
	<u>ر</u>	Clay, pale grey, silty. Altered schiet.	3 5 5 \$ 5 \$ 5 5 \$ 5 5	42				-4
Z	DRMATI	in the second se	5 5 5 5 5 5 5 5 5	43	Alleria de la companya del companya de la companya del companya de la companya de			4
		Clay, grey, silty, pyritous. Altered schiet	5 5 5	44				Ц
77.	E WOR TH	No core recovered:	L	45				- J
	PPE	Clay. pak grey. silty, Altereal schiet.	5 5 5	ЦL.				L
!		Clay. pale grey. Altered schist,	5 5 5 5 5 5 5 5 5	47_	BW 32/15			_ 4
		End of Hole 47:19 metros		48	The second secon			-4
				1.1			1	
				1			+	
				5 33,44				
				,				•
			7,		The state of the s			
		A SECTION OF THE SECT						
	1				MPSON Carlos			
				10-2-			* -	
		148.46			RAW MATERIALS DIVISION			
76	_e N	(ARMS.			DRILL Nº ISUN 415 LOCK TYPE Roner, 160 D. DRILLER W.T. Trestail DRAN	Michol Michol MN.D.	N	

HOLE NO DHC 5 NEWBOLD GENERAL REFRACTORIES LTD. SCHIAL NO LOG OF DIAMOND DRILL HOLE PROJECT S. A Clay Deposits PLAN REFERENCE G143 FEATURE BINDWOOD Clay Pit COORDINATES LOCATION Section 6397, hundred of Talunga ANGLE FROM HORIZ 900. DIRECTION. AGE UNT LOG DEPTH DESCRIPTION OF CORE STHUCTURES Sand, pale grey, slightly clayey 9-DELAIDEAN SADDLEWORTH -12 13-15 18 19 BAW MATERIALS DIVISION BEMARKS. DRILL Nº SUN 415 .. LOGGED TYPE Planeer 160 D. Nichol DRILLER W. T. Trestail. DRAWN. D.N. STANT . 4-5- . 14 . . . THACED ANISH . 8 - 5 - 74 ... CHECKED SHEET 1. OF 3. DPG No. 25

047

HOLE NO DHC 5 NEWBOLD GENERAL REFRACTORIES LTD. SERIAL NO. LOG OF DIAMOND DRILL HOLE FEATURE BIRDWOOD Clay Put. COORDINATES -LOCATION Section 6397, hundred of Talunga. ANGLE FROM HORIZ 90° DIRECTION ... DESCRIPTION OF CORE LOG DEPTH sthuctures Sood, pale grey, slightly clayey 7 22. **23**-24 25 Quantitie off-white and grey friable bands and glassy bands 26 foliation at 30% to core axis 27 28 29 30 31 32 33 33 34 34 35. 35 34 No come recovered. Quantzite, off-white and grey 38. 39. 39 haw materials division Bemarks. DRILL Nº SHY.415. LOGGED..... TYPE Monrey 160. D. Nichol... DRILLER W.T. Trestail.. DPLAWN. D.N. .. STANT .. 4,5 -. 74 ... THACED ANISH 8-5-74 ... CHECKED .. SHEET 2. OF 3. DPG No. 26

HOLE NO DHC 5 NEWBOLD GENERAL REFRACTORIES LTD. LOG OF DIAMOND DRILL HOLE PROJECT S.A Clay Deposits PLAN REFERENCE G143 FEATURE BINDWOOD Clay Pit. COORDINATES. LOCATION Section 6397, hundred of Talunga. ANGLE FROM HORIZ 90° DIRECTION. LOG DEPTH DESCRIPTION OF CORE STHUCTURES A st Quartzite, off-white and grey 41 End of Hole 40.13 metres RAW MATERIALS DIVISION REMARKS. DRILL No "sun 415 LOGGED ... TYPE Proneer 160 D Nichal DRILLER W. T. Trestail DRAWN DN STAPIT . 4-5-74 ... THACED. ANISH 8-5-74 CHECKED SHEET 3 OF 3 DAGINO

HOLE NO. DHC 6 NEWBOLD GENERAL REFRACTORIES LTD. LOG OF DIAMOND DRILL HOLE SERIAL NO. PROJECT S. A. Clay Deposits FEATURE BINDWOOD Clay At COORDINATES LOCATION Section 6397, hundred of Talunga. ANGLE FROM HORIZ 90° DIRECTION . description of core LOG DEPT STHUCTURES No cone recovered. Schist, grey and grey-brown, decomposed toliation at 10° to core owis 3 No core recovered, Schist. pale brown, decomposed. No core recovered. Schiet grey decomposed. foliation at 15° to core axis No core recovered. Schist, grey and black, decomposed. foliation at 100 to core axis 12 No core recovered. <u>Schist</u> grey-black, decomposed, foliation at 20° to core oxis 15 No core necovered 16 17. Schist black decomposed. 18. 18 No core recovered 19 raw materials division Bemarks. DRILL Nº 3544.415. LOGGED ... TYPE Ploneer, 160 D. Nichal. DRILLER W.T. Trestail DRAWN DIN START. . 17-8-74 .. TRACED. ANISH .. 19-8-74. CHECHED HEET 1 OF 2 DEGINE

HOLE NO DHC 6 SERIAL NO.

PROJECT S.A. Clay Deposits

PLAN REFERENCE 643

FEATURE Birdwood Clay Pit.

COORDINATES

DIRECTION

LOCATION Section 6397, hundred of Talunga ANGLE FROM HORIZ 90° LOG DEPTH DESCRIPTION OF CORE STRUCTURES No core recovered 8 5 8 5 8 5 5 5 Schist, greyand brown, decomposed. 21 21 22 22 No core recovered. 23 23 . 5 <u>Guartzite</u>; grey, minor bands of schist. foliation at 20° to core oxis 24 24 No cone recovered. 25 25 26 . 1: <u>Privantzite</u> grey minor bands of day Schist pale grey decomposed. \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ 27 foliation at 200 to core axis 28 28 No core recovered 29 29 Schiet, gray, decomposed with bands 30 35 of white clay 31 31 No core recovered 32 32 33 End of hole 32.20 metres 33 RAW MATERIALS DIVISION BEMARINS DRILL Nº SUU 415 LOGGED. D. Nichol TYPE Proneer 160 DHAWN D. N. DAILLER W.T Trestail START 17. 8.74 THACLE ANISH 19-8-74

THEET 2 OF

2. LAGINO.

LOG OF DIAMOND DRILL HOLE

PROJECT S.A. Clay Deposits

PLAN REFERENCE

FEATURE BIRDWOOD Clay Pit COORDINATES

LOCATION Section 6397, hundred of Talunga ANGLE FROM HORIZ 90° DIRECTION.

CNIT	DESCRIPTION OF CORE	LOG	DEPT-	STAUCTURES	338
1	Clay brown, Soil units and materials within the soil profile.	01010101010101010101010			
	Na core recounted.				
	Clay off-white, silty. Altered schist,	10101010101010101010101010101010101010	3-	B.U 33/75	
	No core recovered		4		
	Clay.off-white, suty. Altered school.	5-5 -5-6 -5-6 -5-5-	5- L	B W 34/75	
	No core recovered.		7		
MATION	Clay, off-white, silty. Altered schist,	14 14 14 14 14 14 14 14 14 14 14 14 14 1	a	ືນ ພ. 35/15	
		21	(0		
TH FOR	No core recovered <u>Clay</u> off-white, silty. Altered schist.	515151 515151 515151	-1	15 W 36/75	
DLE DOR	No care recovered.	232	12- 13-		
\$ P	Schist; grey and brown, decomposed.	555 555 555	14		
	<u>Clay</u> off-white, silty. Altered schist.	- S - S - S -	15_		
		- 5 -	iL T	B.W 37/75	-
		5-S - S-S - S-S	/I_		-1
			18		
		4 14 14 14 14 14 14 14 14 14 14 14 14 14	19 20		
				RAW MATERIALS DIVISION	
E	MARKS.			DRILL NO SHH 45 LOGGE TYPE PIDNECT 160 D. NIG DRILLER W. Trestail DRAWN START - 21 - 6 - 74 TRACE HNISH 25 - 6 - 74 CHECK	hol J. D.N D.

NEWBOLD GENERAL REFRACTORIES LA

HOLE NO. DHD 2 SEPHAL NO.

LOG OF DIAMOND DRILL HOLE

PROJECT S.A. Clay Deposits PLAN REFERENCE G143
FEATURE Birdwood Clay Pit COORDINATES LOCATION Section 6397, hundred of Talunga. ANGLE FROM HORIZ 90° [

LINO	DESCRIPTION OF CORE	LOG	DEPTH m.	STAUCTURES	3 53	COUNTY	DELIT m
	Clay, off-white, silty. Altered schiet. Clay, off-white, silty. Altered schiet.	375	21	B.W 37/15			_2ı
		5 - 5 - 5 - 5 -	22,-				_2
	No core recovered, Clay, off-white, silty. Altered schiet.	5 3 5 5 3 5	23_	B.W 39/75			_2:
	N6 core recovered.		24				_2
	Clay, off-white, silty. Altered schist.	Service in the later of the lat	25	B.W. 46/75			_2:
		35 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	27_				_ 2
	No care recausered,		28_				2i
No	Cby, off-white, silty. Altered schiet.	S-5- - 5-5	29_	BW 41/75			_2
H FORMAT	No con recovered:		30_ 31_				- -3 - -3
DALEWORT	Clay, off-white, silty. Altered schiet.	4 to 10 10 10 10 10 10 10	33 33	BW 42/75			_ 3
6.0	No core recovered.		_33_ 34_				_ 3 _ _3
	Clay pale red brown, silty. Altered schist Schist pale red brown, decomposed.	5 \$ S 5 \$ S	35.				_3
	No cone recovered.	\$ 6 5 S	36			1	_3
			37_				-3 ⁻
	Schist. yellow and red brown, decomposed.	S S S S S S S S S S S S S S S S S S S	38				-3
	No core recovered.		39_				-34
2.5	14.8.160		40	RAW MATERIALS DIVISION			40
	Marks.			DRILL Nº SULL 415 LOGGE TYPE Rioneen 160 D. Nic DRILLER W.T. Trostail DRAWN START 21-6-74 TRACE FINISH 25-6-74 CHECK SHEET 2 OF 3 DRGM®	hol. 1D.	, بہ	

053 HOLE NO D.H.D 2

PROJECT S.A. Clay Deposite ... FEATURE BIRDWOOD Clay Pit ...

PLAN REFERENCE . G143

ANISH . 25- 6 -74 CHECKED .

3. OF 3. DRG Nº 32.

COORDINATES

L'NO	DESCRIPTION OF CORE	LOG	DEPTH m.	STAUCTURES	30 5 30 5
	No core recovered.				
FORM	Schiet, yellow and red brown, decomposed,	\$5 \$5	4		
PRIM	No cone recovered,		42		
D.A.C.		ľ	43		
SAD.					•
			4		
	End of Hole 43.70 metres		: -	, rus	
		1			
2					
		6.7.4	.		
		1.			
्रो ्ः					
		136.34 136.34		•	
			1.2.		
		7.3	-		
_1		<u> </u>	1	BAW MATERIALS DIVISION	
£	Marks.			DRILL NO SHA 45 LOGG	ED.
				TYPE Roneen 160 P. Nic	chal
				STANT: 21-6-74. THAC	YN D.N

LOG OF DIAMOND DRILL HOLE

HOLE Nº DHD 3

PLAN REFERENCE

PROJECT S. A. Clay Deposits, FEATURE BIRDWOOD Clay At. LOCATION Section 6397, hundred of Tolunga

LINI	DESCRIPTION OF CORE	LOG	DEPTH m.	STAUCTURES	33 33	Ţ,
	Clay, brown, Within soil profile	0101		L.		
1		0-0				
		0-0	,			
		0-0	,,⊤			
	Clay, off-white, slightly silty. Altered achist.	8-S	3			_
		5 - 5 - 5 - 6				_
		= 35	_4			\downarrow
	No core recovered .	S ? S		31		+
	Clay, off-white, slightly silty. Altered achist.	S - S - S - S - S - S - S - S - S - S -	5 -	BW 48175		-
	Clay white, slightly silty. Altered schiat.		6	BU 14/75		1
		5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5				
	Clay off-white slightly silty. Altered schist	5.5	7	Bu is 15		#
	Clay off-white, silty. Altered schist,	5-5		BU 16/15		+
		5 - 5	. 8			-
		5 - 8				ŀ
	Clay. off-white, slightly silty. Altered schist.	5 - S				+
		- 5 -	10	BW 17/75		
٥	est.	5-5				Ī
Ę		- 3 - 5 - 5	и			
FOREGISS		5 - S -				
		5 5 5	12-			-
E		3 - S 3 - S				
3	Clay off-white, slightly silty. Altered schist	5 = 5	13	BU 18/75		-
ストの		S - S - S - S				-
4	Clay affichite, slightly silty. Altered schiet,			BU 19/75		+
4		5 - 5 - 5 - 5 - 5 - 5 - 5 - 5	15			
, ,	No core recovered.	- 5 -	13 1			
	No core received		-/6			
	Clay, off-white. Altered schiet:	5 - 5 5 - 5		BN 20175		L
		5 5 5	רו			上
	Clay, off-white. Attered schiet	5-6		BW 21/75		
		5-5	18.			
	<u>Clay</u> , off-white, Altered schist	5 - 5 - 5 - 5 - 5		BW 22/75		
		- 5 -	19		44	-
	Clay, off-white, Altered exhipt	S = S	20	13W 23/75		
	MAG •		\cdot . \cdot	NAW MATERIALS DIVISION		
۰	MAAnj.		ŀ	DRILL NO SUN 415 LOGGE	.D .	
		, , , , , , , , , , , , , , , , , , ,	1-1	TYPE Proneer 160 D Nic		
* XXX				DRILLEP, W. T. Trestail CHAWA		N.
A 11 15 15				START 3-4-74 TRACE		
i		à i à		FINISH 3-4-75 CHECK	E T	

HOLL NO DHD 3.

PROJECT S.A. Clay Deposits

PLAN REFERENCE

FEATURE BIRDWOOD Clay Pit.

COORDINATES

LOCATION Section 6397, hundred of Talunga. ANGLE FROM HORIZ 900 DIRECTION -DEPTH DESCRIPTION OF CORE LOG STHUCTURES S - 5 - 5 - 5 - 5 -BW 23/75 Claus off - whiter Altered schist. 3,3 Clay, pale grey, Altered schist BW 24 75 <u>Sandy Clay, yellow-brown</u>. Altered schist. 5 - 5 5 - 5 3 - 5 3 - 5 BW 25/75 Slay, pale grey. Altered schist. 21 22 23 23 No core recovered, 24 24 25 Clay, off-white and red brown. Altered schist Clay, pale grey. Altered schist. No core recovered 26 75 Clay, white, Altered schist, 27 27 \$ - 5 Clay, white, Altered schist BW 27 75 5 29 28 No core recovered, 29 29 - S - S - S <u>Clay</u> off-white, slightly silty. Altered schist, BW 21/75 30 30 Clay, off-white, slightly silty. Altered schiet, BW 29/75 32 32 33 33 No core recovered Clay, grey, silty. Altered schist. Clay, white, slightly sulty. Altered schist, BY 30175 35 35 BW 31/75 <u>s</u> = Clay white, slightly silty, Altered schist, 36 Clay, off-white and pale brown, minor 37 37 staining silty. Altered schist. 5 38 8 6 5 5 38 Schist pale brown decomposed 31 No core recovered 40 40 BAW MATERIALS DIVISION REMARKS DRILL Nº SAU 415 LOGGED. TYPE Roneer 160 D. Nichol Driller U.T Trestail DRIAWN D. N. STANT 3-4-74 THACED. ANISH 8-4-74 CHECHED SHEET 2. OF 3. DAG No.

1	E	OLECT S.A. Clay Depos KTURE Birdwood Clay ATION Section 6347,	Pri.	ND PLA COO	DRIL I REF	L HOLE FERENCE GUI		***		1.3
T SU	1	DESCRIPTION					1.00			EP m
	Feener Tool	Nacore recovered. Schief yellow-brown adopting a dopoing asad. No sore recovered:	in the second se	2000	7-	foliation at 45	TO core. o	4.15		-4
	DLE JORTH	School grey, decomposed by core recovered. School pale red-brown as		6.6 0	43-	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
	\$	End of Hole 44 90 me			45					# -
								in the second		
4.0										
					1					
P	EN	JARKS.				PAW MATERIALS DRILL NO SHU 4/5 TYPE Planeer: 160 DRILLEP, W.T. Trest START: 3 - 4 - 71 PINISH: 8 - 4 - 7 HEET: 3 OF 3	LOCK D. I Hail DPA I TPA 4 CHE	JED. Vichol WN. L JED. CHED.) · . W	

HOLE NO.

PROJECT S.A. Clay Deposite

PLAN REFERENCE

FEATURE Birdwood Clay Pit. LOCATION Section 6897, hundred of Talunga

COORDINATES

DIRECTION

ANGLE FROM HORIZ 900 AGE DESCRIPTION OF CORE LOG DEPTH STAUCTURES 2 50 Clay pole brown , plastic within soil profile. Clay, white, silty, Attered schist. No cone recovered. Clay, white and red-brown, silty. Altered schist. કું કું No core recovered. Clay, white and red-brown, silty. Altered schist No core recovered Ferricrete, brown, h No core recovered. 5 5 5 Clay, white and red-brown, sulty. Altered schist \$ 1. \$ 5 5 5 5 5 Clay off-white and red-brown, silty. 5 5 Altered schist. 8-5 5 5 5 5 5 No core recovered. Clay, pale red-brown, silty. Altered schist, Chy.red-brown, silty. 5 11 \$ \$ \$ \$ Clay. off-white and pale red-brown, silty Altered schist. \$ \$ \$ \$ \$ \$ 12 5 12 5 5 5 5 <u>s</u> 13 Clay off-white silty. Altered schist. B.W 11/75 s 14 14 5 " Clay : pale brown, silty. Altered schiet. foliation at 45° to core axis \$ \$ \$ No core recovered - 16 lay off-white and pale brown, silty. Altered schiet. 5 6 5 Clay, brown silty. Altered schist. 355 No core recovered \$ \$ \$ \$ \$ \$ Clay brown, silty. Attered schiet foliation at 5° to core axis: 555 Clay pale brown and off-white, silty . \$ \$ \$ \$ \$ \$ Altered, schist. \$ 5 S 19 19 RAW MATERIAL'S DIVISION BEMARINS DRILL NO SUR 415 LOGGED. TYPE Planeer 160 D. Nichol DRILLER W.T. Trestail UPIAWN D. N. START 26-6-74 THACLE ANISH 1-7-74 CHECHED DAG Nº SHEET OF 3

058

HOLE NO DHD 4 NEWBOLD GENERAL REFRACTORIES LTD. LOG OF DIAMOND DRILL HOLE SEPIAL NO PROJECT S.A. Clay Deposits. PLAN REFERENCE ... 4 143 ... FEATURE Bindward Clay Pit. COORDINATES LOCATION Section 16397, hundred of Talunga. ANGLE FROM HORIZ. 900. DIRECTION. description of core LOG STHUCTURES Lay pale brown and off-white, sity. Altered schirt Clay palebrown and brown, silty. Altered, schief 21 -21 foliation at 150 to come axis. 22 22 23 23 No core recovered. <u>bchist, greybrown, decomposed</u> 24 24 SS 25 No core resourced 26 26 \$ 5 5 \$ 5 5 \$ 5 5 Schiet, grey decomposed. 21. 27 Clay off-white, silty, ... BW 12/75 No core recovered 29 29 353 Clay, off-white, silty, alaystone bands. Altered schiet. Schistigrey, decomposed. 30 No core recovered. Schipt grey decomposed 55 32 foliation at 75° to cone axis Stat, pale grey, decomposed. No core recovered 34 Clay off-white, eithy. Altered achist 35 35 <u>Quartzite</u> polegrey, hand B.W 13/75 <u>Clay</u> off white, silty. Altered schist. 37 No core recovered Sandstone, white, dayey 38 Clay, pole grey, sandy, Altered schist. 39 Clay, pale grey, eilty. Altered schiet BAN MATERIALS DIVISION PEMARKS. Drill No. 344.415... Logged... TYPE Moneer 160 ... D. Nichol. DAILLER W.T. Trestail OPLAWN. D. N. STANT .. 26 :. 4 :. 74 .. THACED ANISH 7 ... 7 CHECKED. HEET 2 OF 3 DAG No. 37

NEWBOLD GENERAL REFRACTORIES LTD.

LOG OF DIAMOND DRILL HOLE

SEHIAL NO

PROJECT S. A. Clay Deposits

PLAN REFERENCE

FEATURE Birdwood Clay Pit. COORDINATES
LOCATION Section 6397, hundred of Talunga, ANGLE FROM HORIZ 900 DIRECTION

LNO	description of core	LOG	DEPTH m.	STAUCTURES	300 € 300 €
>	Clay pale grey, silty. Altered schist.	555			
FORMATIO	No core recovered.		41-		
y.	Clay. pale gray. Silty and sandy Decomposed schist	355	42		
WORTH	Clay. pale yellow brown, silty. Decomposed schis	\$ 5 5 \$ 5 5 \$ 5 5 \$ 5 5	43		
SADDLE	Ng care recovered.		44-		
	End of hole: 44.70 metres.		45		
,					
			1		
					-
-					
to minute and a second					
ĺ					

DRILL Nº SUU 415 LOGGED. TYPE Pioneer 160 D. Nichol DRILLER W.TTrestail DRIAWN DN. STAPT . 26 - 6 - 74. THACED ...

ANISH 1-7-74

3. OF. 3. DRG No. 38

		NEWBOLD GENER LOG OF DIAMO		2 7 2	CTORIES LT. HOLE NO.	60 Di		5 .
FE	Α.	DIECT S.A. Clay Deposits	PLAI COO	N REF	Ference 4143			• • •
AGE	- 2 3	description of core	LOG	DEPTH	STAUCTURES	758 200	CASING.	DEPT m
RECENT	-	Clay, brown. Soil units and materials within the soil profile.	01	• 1 _				
		Schiat, brown, decomposed.	8 5 S	2_	foliation at 300 to core axis			- 2
		Schiet, grey, yellow and red brown, decomposed	\$ 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	3_ 4- 5-				-3 - -4 -5
		Clay, off-white, silty. Minor inon stoining.	0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1		BW 10175.			_ 6 _ 7 _ 8
			- 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5	1				- <u>-</u> ዓ
	4.	No core recovered:		10_				10
	Ľ	Quartzite, off-white hard		"!≕				- - 11
RDELAIDERN	SHODELENOKIA	Sandstone, grey. Soft,		13 15 1				-12 -13 -14 -15
		Quartaite, off-whole, hood.		19	foliation at US® to core aus			- 17 - 18 - 19
<u>.</u>		AAR IGC			RAW MATERIALS DIVISION	ليب		-44
* ***********************************	ا	MARKS.			DRILL Nº SUN 415. LOGGED TYPE Planeer 160 D. NIC DRILLER W.T. Trestail. DRAWN START 12:8-74. TRACED FINISH 16-8-74. CHECKE SHEET 1 OF 3. DRG N°	hol D.	'n	

PROJECT S.A. Clay Deposits PLAN REFERENCE 6143
FEATURE BIRDWOOD Clay Pit COORDINATES

SHEET . 2 OF 3 DEGINO

DNO T	DESCRIPTION OF CORE	LOG	DEPTH	STHUCTURES	100 S CE 100 S CE
	Quartzite, off-white, hand		10 A		
			*21		-
			12-		
			23_		
			24		-
			25		
			26		
			27		
			28		-:
			-		
7100			29_		
MA			30_		
FORM			_		
PORTH	Clay, off-white, sandy, red stoined. Decomposed schist.	8 3 3 8 3 5 8 5 5	31_		
ORT		\$ 3 5	32_		
	Tecnocete	(//////			
	No core recovered.		33		
SA			34		
					_
			35		3
	Schist, grey, off-white and pole brown ,	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	36		
	decomposed.	\$ 5 S			- '
	No core recovered		31_		-3
			-		-
		5.5	38_		-3
	Schist arey.	\$ \$ \$ \$ \$ \$	39_		
	No cone recovered.		1 9 9 1 - 1		- .
Ц			40	BAW MATERIALS DIVISION	4
3E	MARKS.				
				DRILL NO SUR HIS LOCGED TYPE Roner 160 D. Nich	
				DRILLER W.T. Trestail DRAWN.	
				STAAT 12-8-14 THACED.	

HOLE NO DHD 5

NEWBOLD GENERAL PLEPACTORIES LA LOG OF DIAMOND DRILL HOLE

PROJECT S. A. Clay Deposits
FEATURE Bindwood Clay At.

PLAN REFERENCE

COORDINATES

CNT	DESCRIPTION OF CORE	Log	DEPTH	STAUCTURES		3
SAINLAND P	No care recovered.		. 41			
	End of hole 41-19 metres		42_			1
						-
						-
						1
						-
				. 1		1
						-
			.2			-
				•		-
						[.
	taliana di Salamana di Salama					
1						
1,				BAW MATERIALS DIVISION	N	L
sea	MAKN;			DRIFL Notes sun 415 LOX TYPE Roncer 160 D. DRIFLER WITTRESTAIL CH STAPIT 12-8-74 19	OGED. NICHOL AWN D.N ACET. ECMES).

NEWBOLD GENERAL REFRACTORIES LTD.

LOG OF DIAMOND DRILL HOLE

DHEI HOLE NO

PROJECT S.A Clay Deposits.

PLAN REFERENCE 6143

FEATURE Birdwood Clay Pit.

COORDINATES

LNO	DESCRIPTION OF CORE	LOG	DEPTH m.	STHUCTURES	5
1	Clay, pale brown, plastie. Within soil profile.	01	• > <		
	Clay, red-brown and yellow-brown, silty. Altered schist.	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	3- 4- 5-	foliation at 45° to core axis	
	No core recovered.		-		-
4 TION	<u>Clay</u> , red-brown and yellow-brown, silty Altered Schist	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	1 8		
		S S S	9-		
FORMA		555	10		
٤	No core recovered		- 1		
1 5	Altered schist.	5 5 S			-
200		5-5	12	ชพา าร	
79744	Clay off-white. Attered schiet	72-5		- B N 8 175	
V	Altered Schist. SSS SSS SSS SSS SSS SSS SSS SSS SSS				
	Clay off-white, silty. Altered schist.	\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	14	B U 9/75	
	Clay, grey, silty. Altered schiet.	\$ 5 \$ -5		foliation at N5° to core axis.	
	No cone recovered.				
	Clay, grey, silty. Altered schist.	5 5 5 5 5 5 5 5 5 5 5 5	8	foliation at 70°+0 core axis	
	No core recovered.		19-		
1		1	20		
	emarks !		•	NAW MATERIALS DIVISION	

DRILL Nº SUK 415 LOGGED TYPE Roneer 160 D Nichol DRILLER W. T. Trestail DRAWN D. N. START 18-5: 74 THACED ANISH 21-5-74 CHECKED SHEET ... OF 3 DRG No. 42

HOLE NO DHE! NEWBOLD GENERAL REFRACTORIES LTD. SEPHAL NO. LOG OF DIAMOND DRILL HOLE PLAN REFERENCE 6143 PROJECT S. A. Clay Deposits FEATURE BIRdwood Clay Pit COORDINATES LOCATION Section 6397, hundred of Talunga, ANGLE FROM HORIZ, 900. DIRECTION ... DEPTH LOG sthuctures DEPTH description of core m. Clay, grey, silty. Altered schist. foliation at 70% to core axis, 21 21 -22 22-No core recovered. 23 Chy, grey, silty. Altered schist. \$ \$ \$ \$ \$ \$ 24 No core recovered. 25 25 \$ 55 \$ 55 \$ 55 \$ 55 \$ 55 \$ 55 26 Clay grey and pale red-brown, silty. foliation at 70° to come axis. Altered schist. 27 27 28 No core recovered. \$ 5 \$ 5 \$ 5 \$ 5 \$ 5 \$ 5 29 29 Clay; grey and pale ned-brown; silty;
Altered schist. foliation at 50° to core axis 30 No core recovered. 31 31 \$5 \$5 \$5 \$5 \$5 Clay grey and pale red-brown, silty Altered schist. 33 33 s 34 34 S S 35 35-S 3(36 No core recovered. 31-Clay grey and pale red brown, silty. \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ Altered schist 38_ 3 foliation at 450 to come axis 39. BAW MATERIALS DIVISION BEMARKS. DRILL No .. SUN 415 ... LOGGED TYPE Ploneer 160 ... D. Michol ... DRILLER N.T. Trestail DRAWN. D. M.

	NEWBOLD GENERA LOG OF DIAMO	ND	DRIL	L HOLE SENIAL NO	DHE I
FE	OJECT 5. A. Clay Deposits. ATURE Birdwood Clay Pit. CATION Section 6397, hundred of Tolungo	000	RDINA	TERENCE G143 TES DIRECTION	· · · · · · · · · · · · · · · · · · ·
AGE	DESCRIPTION OF CORE		DEPTH m.	STAUCTURES	Selve Selve Mestra Mest
	Clay grey and pale red-brown, silty. Altered schist.	\$ 5 5 \$ 5 5 \$ 5 5 \$ 5 5	41_		-41
	No core recovered. Clay, grey and pale red-brown, silty. Altered schist.	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	42_	foliation at 50° to care axis	-42 -43
DEAN	No core recovered. Clay. grey and pale red-brown, silty. Altered schist.	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	*	foliation at 40° to core axis	-44
ADELAI	No core recovered.		4-4-		-46 47
V	Clay, grey and pale red-brown, silty Altered schist	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	48		_48°
	No core recovered.		50_		.50
	End of hole 50.70 metres				
Ri	LMARHS.			PAW MATERIALS DIVISION DRILL No 544 415 LOGGED TYPE Planeer 160 D. Nich DRILLEP W.T. Trestail DPIAWN START 18-5-74 TRACED HNISH 21-5-74 CHECKE CHEET 3 OF 3 DRG No.	al

HOLE NO DHE 2

PROJECT S.A. Clay Deposits

PLAN REFERENCE G143

FEATURE BIRDWOOD Clay Pit.

LOCATION Section 6397, hundred of Talunga ANGLE FROM HORIZ 90° DIRECTION.

LINO	DESCRIPTION OF CORE	LOG	DEPTH	STHUCTURES	3459 359	3000	DE.x
⊇	Clay, red-brown, plastic. Within soil	0101010					1
1	Chy. pale brown. Altered schist.	5 S S S S S S S S S S S S S S S S S S S	2-				- 2
	No core recovered.		3				- 3
	Clay, off-white and yellow-brown, Altered schist,	555 555 555 555	• -				
		\$ 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		taliation at 60° to core au			-
	No cone recovered	353				H	
	Clay, off-white and yellow brown. Altered schist.	\$ 55 5 55 \$ 55 \$ 55 5 55					_ <
FORMATION	No core recovered		10				
	Clay, red-brown. Altered schist.	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	11-				-
DE SLIDE TA		3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5					-
8		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	<i>6</i>	foliation at 60° to core ax	S		
	No core recovered.		16-				-
	Clay, red-brown and yellow brown Altered achist.	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	7	foliation at 80° to come o	l×is		-
	No core recovered.		20				- 4
				NAW MATERIALS DIVISION	4	7	_
*	MARHS.			DRILL No sun 415 LOG TYPE Boneer 160 D. DRILLEHW.T. Trestail DRIA START 26-5-74 TRA FINISH 29-5-74 CHE SHEET 1 OF 3 DRG N	Nichol WN D CED. CHED	N	

STANT...26-6-.74... THACED..... MNISH...29-5-74... CHECKED.... SHEET....2. OF.3... DPG N° ... 46...

HOLE NO DHE 2 NEWBOLD GENERAL REFRACTORIES LP. SEPHAL NO LOG OF DIAMOND DRILL HOLE PROJECT S.A. Clay. Deposits PLAN REFERENCE G143 FEATURE BIOCHWOOD Clay Pit COORDINATES EDCATION Section, 6397, hundred of Tolyinga. ANGLE FROM HORIZ. 9.0° .. DIRECTION description of core LOG Clay, red-brown and yellow-brown. Altered schist 21 22 22foliation at 70° to core axis 23 24 24 25 25-24 26 27 27 No core recovered <u>Clau</u> red-brown. Attened schist. foliation at 45° to core axis . 31 31 No core recovered, AClay red-brown and yellow-brown Altered schist. 33. 33 34 No core recovered Clay, red-brown, Altered schiet 36 No core recovered 37 37-Clay, pak brown. Altered schist, foliation at 45° to core axis. No core recovered. haw materials division PEMARNS. DRILL No Sun 415 LOGGED TYPE Pronzec. 160 ... D. Nichol DRILLER U.T. Trestail .. DRAWN .. D.N. ..

HOLE NO DHE 2 SERIAL NO.

PROJECT S.A. Clay Deposits.

PLAN REFERENCE

G143

FEATURE BIRDWOOD Clay Pit, LOCATION Section 6397, hundred of Talunga COORDINATES ..

DIRECTION.

ANGLE FROM HORIZ 900 LOG DEPTH AGE STRUCTURES DESCRIPTION OF CORE No core recovered. 555 555 555 555 555 Clay, red-brown. Altered schist. 42 42 .43 No core recovered. 43 Clay grey-brown. Altered schist. 44 -44 45 46 46 No core recovered. 41 47 48 49 49 **5**0 50 End of hole 49.50 metres

REMARKS.

BAW MATERIALS DIVISION

DRILL No LSUN 415 LOGGED. D. Nichol TYPE Ploneer 160 DPIAWN DIN. DRILLER W.T. Trestail STAPIT. 26-5-74 THACLE AT

ANISH 29-5-74

CHECHED

OF 3 DAG No. 47 SHEET . 3

	ATURE Birdwood Glay Pit. ATION Section 6397, hundred of Talunga. DESCRIPTION OF CORE	Q 10 (10)	U + 1877) - 1	TES	7	CASING W
W S	Clay, ned-brown, plastic, Uithin soil profile.	- 0 - 0 - 0 - 0	m.		23	3 '''
34	Clay off-white, iron stained. Altered. schist.					
	No core resourced.	575				
	Clay, off-white, slightly iron stained. Altered schist.			already sampled:		-2 -3 -4 -5 -6 -1
SAMATION	Clay, off-white, slightly inon stained, Kaolinite. Altered Schist.	5 - 5 5 - 5 5 - 5 5 - 5	9 .			-9 -ю
6	No core recovered.	2 - 2	11_			- 11
AIDI	Clay, off-white, knownite. Altered schist.	\$ = \$ \$ = \$ - \$,, -	BW 6175		
A DELLEGIO	Clay grey with red iron-staining, Altered schist.	\$ 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	구	foliation at 45° tocare axis.		- -14 -15
	Clay, grey, slightly from stained silty. Bitered schist.	\$ 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	. 글 . 그 . 일 . 일 . 일	foliation at 30° to core axis.		-18
				NAW MATERIALS DIVISION		
PE	MARHS.			DRILL No. 544 415 LOGGE TYPE Ronger 160 D. Nico DRILLER W.T. Tractail DRAWN START 23-5-14 THACE HNISH 25-5-14 CHECK CHEET 1 OF 3 DRG No.	hol 1D 04 1E0.	AT

HILL	DESCRIPTION OF CORE	LOG	冕	structures	25 S.	DEF N
3	Clay, grey and red iron stained, silty. Altered schist,	3 65 5 65 6 5 5 5 5 5	°21—	faliation at 10° to core axis.		2
	No core recoverse.		22_			_ 2
		655	23-			_2
*	Clay, pale brown, heavily inon stained. Ritered schist.	665 \$55 \$55 \$55	24-	foliation at 45° to core axis.		
	No core recosered.	6 55	25			-:
	Clay, yellow brown. Altered schist. Minor quartalte bands	0 i/ 5 - 5 S	1.5			-
	No core recovered	6.5	취			-
	Clay. off-white, iron stained. Altered schist.	5 5 5 5 5 5 5 5 5	28			-
ATION		5 3 5 5 5 5	29			E
FORM	Clay, pale red. brown iron stained. Altered Schist.	\$ 55 5 55 5 55	32	foliation at 45° to core axis		-
ORTH	No core recovered.		- 3L			F
370		₹ <u>5</u> 5	32			+
5.62	Clay grey and brown, iron stained. Altered schist. Minon Karolin Jeins	\$ 5 5 5 5 5 5 5 5	33-	foliation of 10° to come aws.		-
		\$ 5 6 \$ 5 5 \$ 7 5	34			-
	No care recovered . Clay redibious inonstained Altered schiet.	2 6 6	35	foliation at 45° to core axis		<u> </u>
	No core recovered		34			-
			31			-
,	Clay, grey and red-brown, mon storned	£ 5 5	3%			+
	Altered Schiet: No core recovered	\$ 45 5 5 5 5 5	39.	: 		+
			1 40	BAW MATERIALS DIVISION		+

NEWBOLD GENERAL REFRACTORIES LT. LOG OF DIAMOND DRILL HOLE

HOLE NO DHE 3

... PLAN REFERENCE ... 6143

	wood Clay Pot on 6297, hundred of Talunga.	COORDINA ANGLE FI		
	IMPTION OF COME	LOG DEPT-	STHUCTURES	SO S m
No come reco	and red-brown, iron stained. ed schist:	3 5 41-	foliation at 20° to come ans	-4
		\$ \$ 42 <u>.</u>	State PPS	-112
No core reco	ned pale brown is	\$5.5 \$5.5		43
Aller	ed actuat	100mm 14mm 15mm 15mm		
y No core rec	overed.	3 5 H5 9 5 9 H		-416
Clay, grey Alten	and pole brown, and achief.	\$ 5 3 5 3 5 3 5 6 3 5 6		
		5 5 48 5 5 5 5 5 5 5 5 5		
End w	Hole 4810 moths:	49		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
	Hause			
1.00				
		1 1 -		
進。				
DEMACH.			BAW MATERIALS DIVISION	N
Pemarks.	Established		DRILL No. Sun 415 LCC TYPE Romer, 160 D: Driller W.T. Trestoil Dri START, 23-5-14 Th MNISH 25-5-14 CH	Nichol AWN. D. N. ACED M _T .

CHEET 3 OF 3 DEG No

NEWBOLD GENERAL REFRACTORIES LT. LOG OF DIAMOND DRILL HOLE

HOLE NO DHE 4

PROJECT S.A. Clay Deposits PLAN REFERENCE G143

FEATURE Bird wood Clay Pit. COORDINATES 2 metres below and 20m. E of proper site 1 OCATION Section 6397, hundred of Talunga, ANGLE FROM HORIZ 900 DIRECTION -

L NO	DESCRIPTION OF CORE	LOG	DEPTH m.	STAUCTURES	\$ 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	DE1
1	Clay and sandy clay, pale brown. Soil units and materials within the soil profile.	A CONTROL OF THE PARTY OF THE P	2			-1
	Clay. off-white and pale brown, silty, Altered schist.	555	3-	foliation at 45° to core axis		
	day, pole brown. Altered schist.	355	77	foliation at 10° to core axis	+ +	H
- ľ	No core recovered		5-			
1	Clay, pale brown, Altered schist.	\$ 55 \$ 55 \$ 55	-			F
ľ	Duartaite pale brown, clayey. No core recovered		8			
	Guartate pale brown, clayey.	10000	-			F
	Clay pale brown Altered schist. No core recovered.	5556				F
	Clay pale brown Altered schist. No core recovered.	5555	10			-
LOK	Clay. off-white. Altered schist.	5 5 5 5 5 5 5 5 5				
LEWORTH	Schist, yellow-brown, limonitic, micaceous, and silty, Highly altered.	5 3 5 5 5 5 5 5 5 5 5 5	/3_			-
SADD		5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	14_			-
A 100 44 MIN AND AND AND AND AND AND AND AND AND AN		5 5 S	16	foliation at 20° to core axis.		-
***************************************		S S S S S S S S S S S S S S S S S S S				-
		555				-
		3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	'`			-

DRILL No . SUU 415 .. LOGGED TYPE Plancer 160 ... D. Nichol DRILLER W. T. Trestail. DRAWN D.N. START: 15-6-74 ... THACED ... 4AT ... ANISH 19- 6:74 CHECKED

NEWBOLD GENERAL REFRACTORIES LTD. LOG OF DIAMOND DRILL HOLE

PROJECT S.A. Clay Deposits.

PLAN REFERENCE 6143

FEATURE Bird wood Clay Pit.

LOCATION Section 6397, hundred of Talunga. ANGLE FROM HORIZ 90° DIRECTION.

LNO	DESCRIPTION OF CORE		DEPTH m.	STHUCTURES)	5 12 12 12 12 12 12 12 12 12 12 12 12 12
1 1	Schist, yellow-brown, limonitic, micaceous and silty. Highly altered.	5 5 5 5 5 5 5 5 5	"2i -			
		S S S S S S S S S S	22-			-2
		5 5 5 5 5	23			-3
		5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	24			
		5 S	25_			-2
		S S S	26			Ŀ
•		555		. L		
		575	۲۱ <u>-</u>			-
7101		5 5 5 5 5 5 5 5 5				-
DEMAT			29_			+
	No core recovered.		30-			-
DRTH			31			ŀ
2600			32			+
SADD			33			-
		•	34			1
•			35			+
	End of hole 34-65 metres					
1						F
						F
		940	-			-
				BAW MATERIALS DIVISIO	N	
ren Sen	yarhs.			DRILL NO SUU 415 LOX TYPE Ploneer 160 D. DRILLEP, W.T. Trestail DPI START: 15-6-74 TR	SGED.	Ar

NEWBOLD GENERAL REFRACTORIES LTD.

LOG OF DIAMOND DRILL HOLE

HOLE NO DHES

OF 3. DRG No.

PROJECT S.A. Clay Deposits

PLAN REFERENCE G143

CNU	DESCRIPTION OF CORE	LOG	DEPTH m.	STAUCTURES	₹% \$9	S nu
ા 1	Clay, grey, and red-brown and yellow-brown and within the Soil profile.	01	* 1			
	Clay, grey, silty, Decomposed schist, Minor concordant veinlets of	\$ 5 5 5 5 5	2			-2
	Kaolin	55	3_			3
		353	4	는 그러워 사용하게 하고 있습니다. 19 1년 시설하다 아닌데 사용하는 10 10 10 10 10 10 10 10 10 10 10 10 10		-4
		1,5	5	foliation at 45° to core axis.		5
			6			_ [
			1-			_7
		3 5 5 5 5 5 5 5 5	8			_ 9
	No core recovered.		9			-
	Clay, grey, silty. Decomposed schist. Minon iron staining.	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	10			-1
TION		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	ıl-			
FORMA	No core recovered.		12-			
TH	Clay. arey silty Decomposed schist Ironstains	5555	13-	foliation at 600 to core axis		
300	No core recovered.		14			
₩	Clay red silty Decomposed schiet Iron stains	\$ 65.	\$	foliation at 450 to core axis		-
SAD	No core recovered.		15			
	Clay, grey, silty. Decomposed schist. Minor Kaolin veins.	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$	16	foliation at 50° to care oxis		-1
	No core recovered.		11_			-
	Clay, grey, silty. Decomposed schist	5 5 5 5 5 5 5 5 5	18_	foliation at 70° to core axis		
	No core recovered.		19_			-1
			20			1
_				RAW MATERIALS DIVISION		ż
ME.	MARHS			DRILL Nº SUN 415 LOGGE TYPE Ploneer 160 D. NI DRILLEY W.T. Trestail DRAWN START: 10-6-74 TRACE	chol U D), N.

NEWBOLD GENERAL REFRACTORIES LTP. LOG OF DIAMOND DRILL HOLE

HOLE NO DHE 5 SEHIAL NO.

PROJECT S.A. Clay Deposits. PLAN REFERENCE G143

FEATURE BIRDWOOD Clay Pit. COORDINATES - LOCATION Section 6397, hundred of Talunga, ANGLE FROM HORIZ 90° DIRECTION -

TINO	DESCRIPTION OF CORE	LOG	DEPTH	STA UCTURES	35 35 35 35	5
	Clay, grey, silty. Decomposed schist.	5 5 S				
	Clay off-white Altered schist. Minor plastic bands	51	21	BW 1/75		-
	No core recovered.		22			
	Clay, off-white. Altered schist. Miner plastic bands	5-	23- 21	Bul 2 75		
	No care recovered:		25			-
	Mixed clay and Quartzite	5.5.5				
	Quartzite, grey, Clayey zone at base		26	faliation at 20° to core axis.		
	Clay. off-white, slightly silty. Altered schiet.	5-5-5-5-5	21-	BW 3175		-
		S-S-S-S-S-S-S-S-S-S-S-S-S-S-S-S-S-S-S-	28.			-
		353	29			-
,	Clay, pale green, silty. Altered schist,	S-S	33	BW 4/75		
RMAT 10	No core recovered.		31			-
RTH FOI	Clay off-white silty, minor iron staining, Altered schist.	555	32	BU 5/15		
F. 130	Clay. off-white, silty and sandy bands,	SSS	33 -			+
SADDA	minor iron staining. Altered schist.	6 \$ \$ 5 \$ \$ 5 \$ \$	34			-
		355	35			
	Ouartzite, pole green, clayey		36			
	<u>Clay</u> , off-white, silty. Altered echist.	3 5 5				
	No core recovered.		37			
	<u>Quartzite</u> , palé green, clayey.		38			-
	Schist, black and grey, biotite rich, abundant pyrite.	235 255 255 255 255 255	39_	·		+
		2 5 5 5 5 5	40			

BEMARKS.

DRILL Nº SAN HIS LOGGED. TYPE Ploneer 160 D. Nichol DRILLEY U.T. Trestail DRAWN D.N. START 10-6-74 TRACED 47 FINISH 14-6-74 CHECKED

2 OF 3 DPG Nº 54

LNO	description of core	LOG	DEPTH	Sthuctures	39 S	DEPI
	No care recovered:					<u>_</u>
San Tage	Duantzite grey. No core recovered.			foliation at 30° to core axis		
2 3	Quartzite, pale grey iminor clay bands.		42-			42
9			43-	foliation at 40° to core axis.		43
3		ننبل	44		##	44
	End of Hole 44-08 metres		45.	10.0		-4
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					<u>11</u>	<u></u>
			461	MAN MATERIALS DIVISION	500	

APPENDIX B

Alumina contents of core samples (results quoted on a dried basis)

R. FOWLER LIMITED, LABORATORY

TEST REPORT

File No. 36/75

Birdwood, drill samples;

Field Number	Depth	Sample No. % Alumina
1-75	DHE5 20,60-21,80	326 27.0
2-75	22.08-24.00	327 27.5
3-75	26, 60-29, 18	328 24.6
4-75	29.18-30.00	329 22,8
5-75	31, 18-32, 80	330 19.9
6-75	DHE3 11.10-12.00	331 32,9
7 ⊷ 75	DHE1 11.80-12.30	332 20.2
8-75	12.30-13.45	333 21,9
9-75	13,80-15,00	334 21.9
10-75	DHD5 5.50-9.10	335 24.6
11-75	DHD4 12,80-14,30	336 34.8
12-75	27.40-28.00	337 30,3
13-75	35,70-36,70	338 28,2
14-75	DHD3 5, 50-6, 65	339 32,5
15-75	6, 65-7, 00	340 29,8
16-75	7,00-9,00	341 32.1
17-75	9,00-12,80	342 34.7
18-75	12.80-14.00	343 29.2
19-75	14.00-15.20	344 32.8
20-75	16.00-17.15	345 34.8
21-75	17.15-18.70	346 33.9
22-75	18.70-19.30	347 36.3
23-75	19,30-20,80	348 36.3
24-75	20.80-21.20	349 38.1
25-75	21, 30-22, 50	350 34.8
26-75	26, 25-27, 50	351 35.1
27-75	27.50-28.70	352 34.8
28-75	29, 30-30, 85	353 35.1
29-75	30,85-32,60	354 37,6
30-75	34.50-35.60	355 28.9
31-75	35, 60-36, 50	356 26,6
32-75	DHC4 46, 20-47, 19	357 34.4
33-75	DHD2 1,80-3,60	358 20.4
34 - 75	4.80-6.20	359 19.9
35-75	7.80-10.50	360 19,6
36-75	10,80-12,75	361 19.1
37-75	14.80-20.70	362 19.7
38-75	22.70-23.50	363 20,4
39-75	24.80-27.50	364 19.2
40-75	28.70-29.30	365 18,2
41-75	31, 70-33, 00	366 18,3
42-75	DHC3 29, 00-29, 50	367 29,7
43-75	29, 50-30, 50	368 30, 1
44-75	32.50-34.70	369 37.6
45-75	34, 70-37, 30	370 36.7
46-75	41.75-45.50	371 33.3
47-75	46, 60-49, 70	372 36.0

R. FOWLER LIMITED. LABORATORY

TEST REPORT

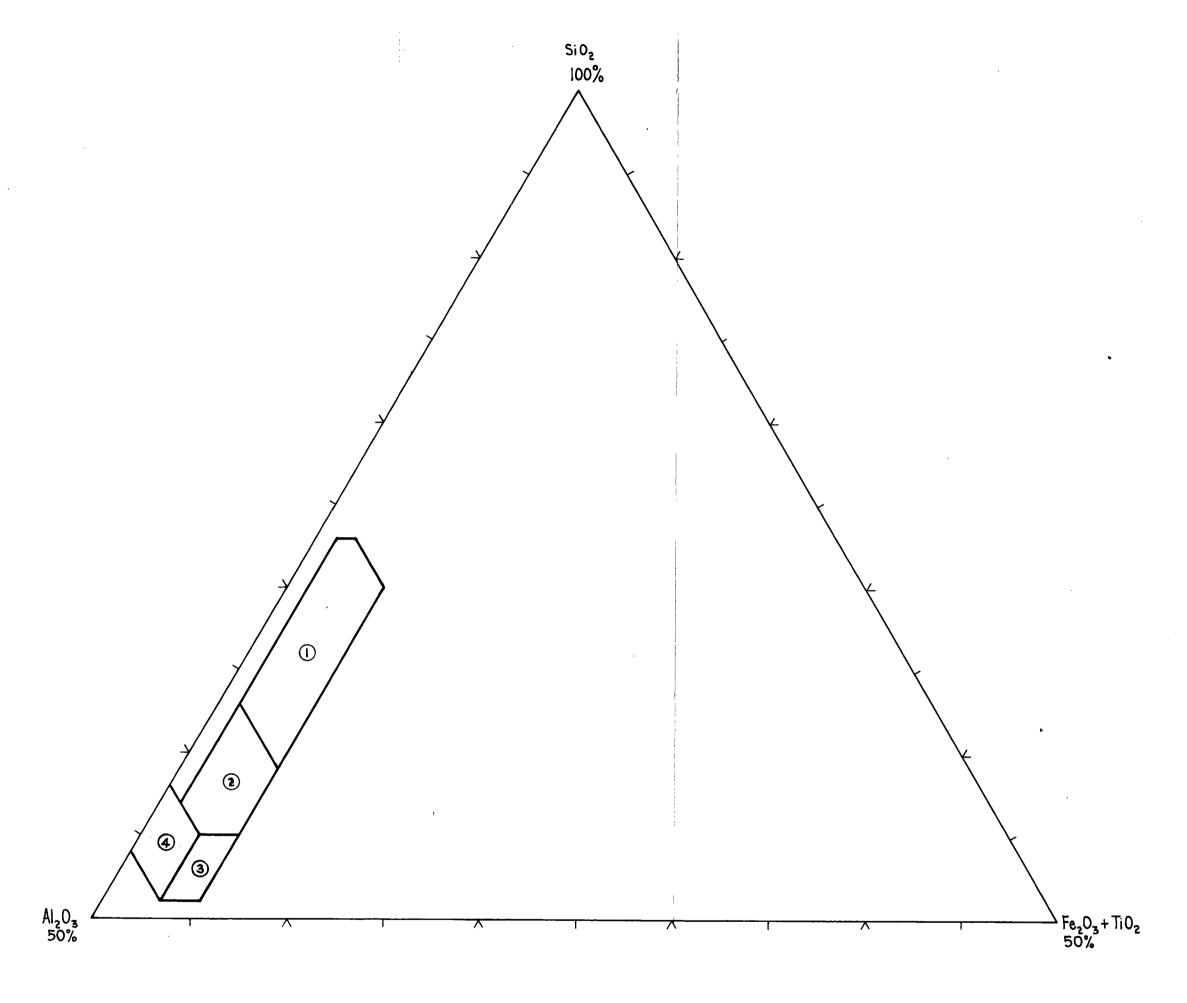
File No. 36/75

Birdwood, drill samples.

	Field Number	Depth		Sample No) .	% Alumina
	48-75	DHD3	4. 50-5. 50	373	•	33,6
	49-75	DHB5	24, 90-25, 50	374	6	23,2
	50-75		30.94-31.70	375		31.5
	51-75		32, 70-33, 79	376	- d 1	31,8
	52-75		33, 79-34, 75	377	•	35,9
	53-75		34, 75-35, 55	378		34.8
	54-75		35, 55-35, 99	379		29.5
	55-75		37.80-38.59	380		24.1
	56-75		39, 20-40, 10	381		34.4
	57 - 75		43.60-44.00	382		28,6
	58-75		44, 60-45, 40	383		30,6
	59 - 75		46.75-47.29	384		29.7
	60-75	DHC2	9, 75-10, 25	385		25.3
	61-75	DIICZ	10, 57-11, 50	386		25, 2
	62-75		11.50-12.00	387		37,9
	63-75		12.57-13.69	388		37.0
			13. 69-14. 70	389		37 . 7
	64-75		14. 70-15. 67	390		36.5
	65-75		15. 67-17. 27	391		32.9
	66-75		· · · ·	392		32.3
	67-75		17, 27-17, 60			35.9
	68-75		17.60-19.70	393		
	69-75		20.27-21.80	394		34.0
	70-75		23, 27-23, 80	395		30,5
	71-75		23.80-28.57	396		29.1
	72-75		28.57-32.10	397		33.1
	73-75		32, 57-35, 57	398		34,5
	74-75	DHC1	2,00-3,55	399		22.6
	75-75		3.55-4.95	400		21.9
	76-75		4.95-6.22	401		23,9
	77-75		6, 62-7, 40	402		24.4
	78-75		7, 95-10, 20	403		25,5
-	7 9- 75		10.95-13.30	404		25,6
	8 0- 75		13, 95-16, 95	405		20.4
	81-75		16, 95-18, 80	406		20.7
	82-75		19, 95-20, 95	407		20.3
	83-75		20.95-21.75	408		20.7
	84-75		26, 65-27, 65	409		20.6
	85-75		29.65-31.35	410		20,9
	86-75		32,65-35,00	411	,	20.7
	87-75		35, 65-38, 65	412		21.4
	88-75	DHB4	35, 72-36, 00	413		34.7
	89-75		39,81-41,00	414		29,9
	90-75		41.00-42.00	415		27.9
	91-75		42,00-42,40	416		24.6
	92.75		45,00-46,00	417		21.2
	93-75		47,60-48.00	///418		29,6
				Hours 1		

CHIEF CHEMIST

7.8.75



Field Nº 1 - White Clay.

Field N° 2 - Fireclay.

Field N° 3 - Kaolin K1.

Field Nº 4 - Kaolin K2.

Based on 281 analyses quoted on a calcined basis.

2648-1

Newbold Raw Materials

A DIVISION OF NEWBOLD GENERAL REFRACTORIES LTD.

BIRDWOOD CLAY & SILICA QUARRY

COMPOSITIONAL FIELD DIAGRAM FOR QUARRY PRODUCTS

COMPILED: D. Nichol.	DRAWN: J. A.H.	SCALE:	SHEET NO:		
DATUM:	DATE: 23 Sept 1975	CHECKED:	S 27.		

MINING TENEMENTS NEAR BIRDWOOD

REF	TENEMENT	LOCAT	ION	HOL	DER	AREA	DAT	E
N ₀	& NUMBER	HUNDRED	SEC	NAME	ADDRESS	(ha)	COMMENCED	EXPIRES
ı	EML 4376	Talunga	4	PGH Industries Ltd	II Harrison St., Renown Park, S.A.	3	18-6-74	17-6-81
2	EML 3611	II	4	n	11	16	1-7-73	30-6-82
3	EML 3410	11.	1	Hallett Brick Industries Ltd.	Hallett St., Allenby Gardens , S.A.	4	1-7-73	30-6-80
4	EML 3601	11	1	Fargo Earthmovers Pty. Ltd.	323 Payneham Rd., Royston Park, SA.	6	1-5-74	30-4-81
5	ML 2994	u	1 € 6397	Newbold General Refractories Ltd.	82 Christie St., St. Leonards , N.S.W.	8	1-7-73	30-6-80
11	EML 4348	П	I£6397	1I	11	8	10-12-73	9-12-80
6	ML 2951	11	6397	п	l l	6	1-4-74	31-3-81
u	EML 4347	н	6397	11	LI .	6	10-12-73	9-12-80
7	ML 2917	11	6397	13	11	11	1-7-73	31-12-79
u	EML. 4346	11	6397	11	11	11	10-12-73	9-12-80
8	Private Mine 231	it.	6396	Hallett Brick Industries Ltd.	P.O. Box 6, Hindmarsh S.A.	10	2-5-74	

LEGEND

Quaternary	
Alluvium.	
Kanmantoo Group	
S S Quartzite - mica schists.	
Burra Group	
Mica schist.	
Quartzite.	

Weathered shale, white	
Geological boundary	
Strike and dip of bedding	
Pit or quarry	
Gold digging x	
Excavation	
Road	
Mining tenement boundary (approx)	
Reference number	
Pipeline	
River or creek	
;	
· (
SCALE	
Q	2 KILOMETRES
Note:	
This drawing was modified from Department of Mines — South Australia unpublished plan no.72—161	

2648-2

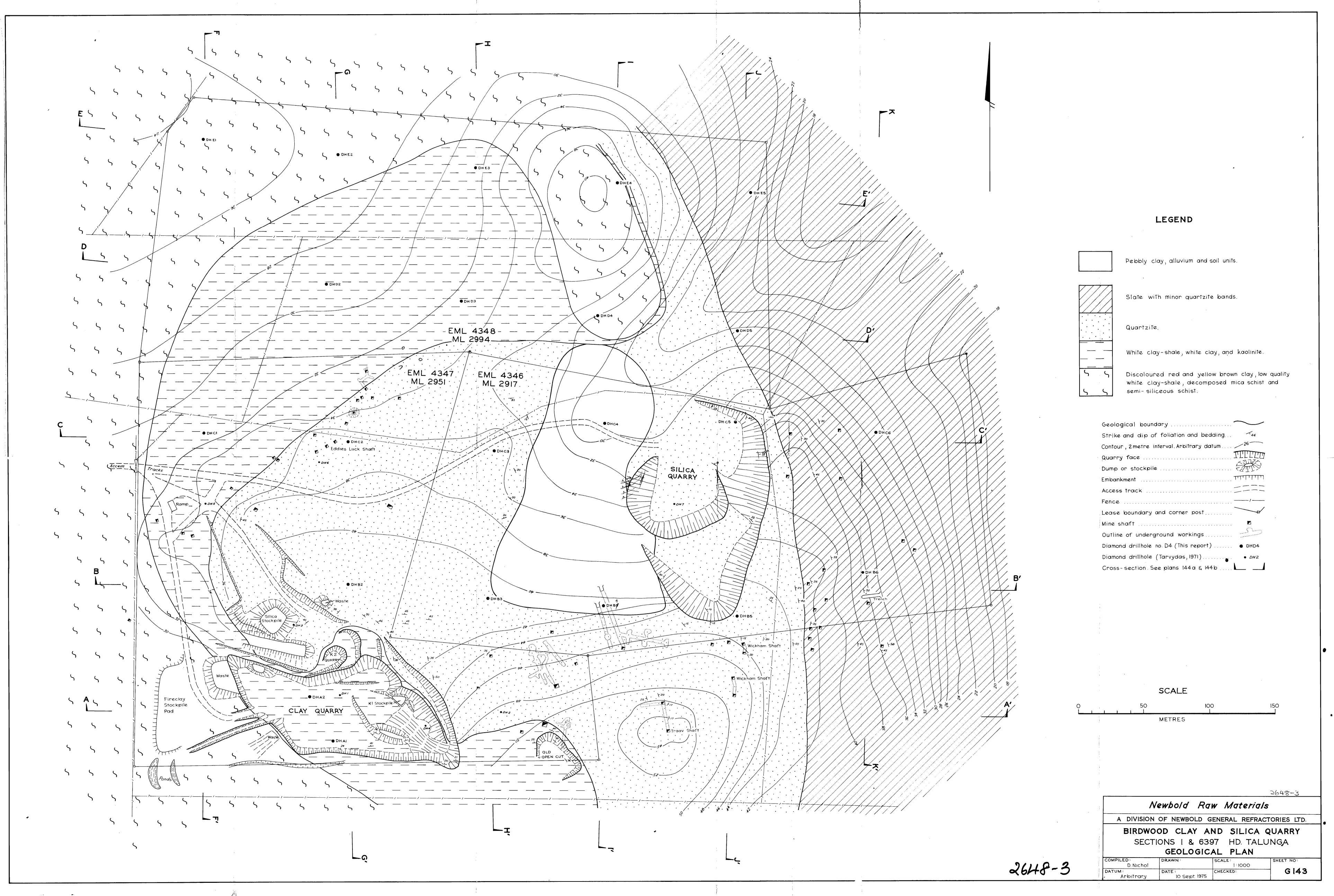
Newbold Raw Materials

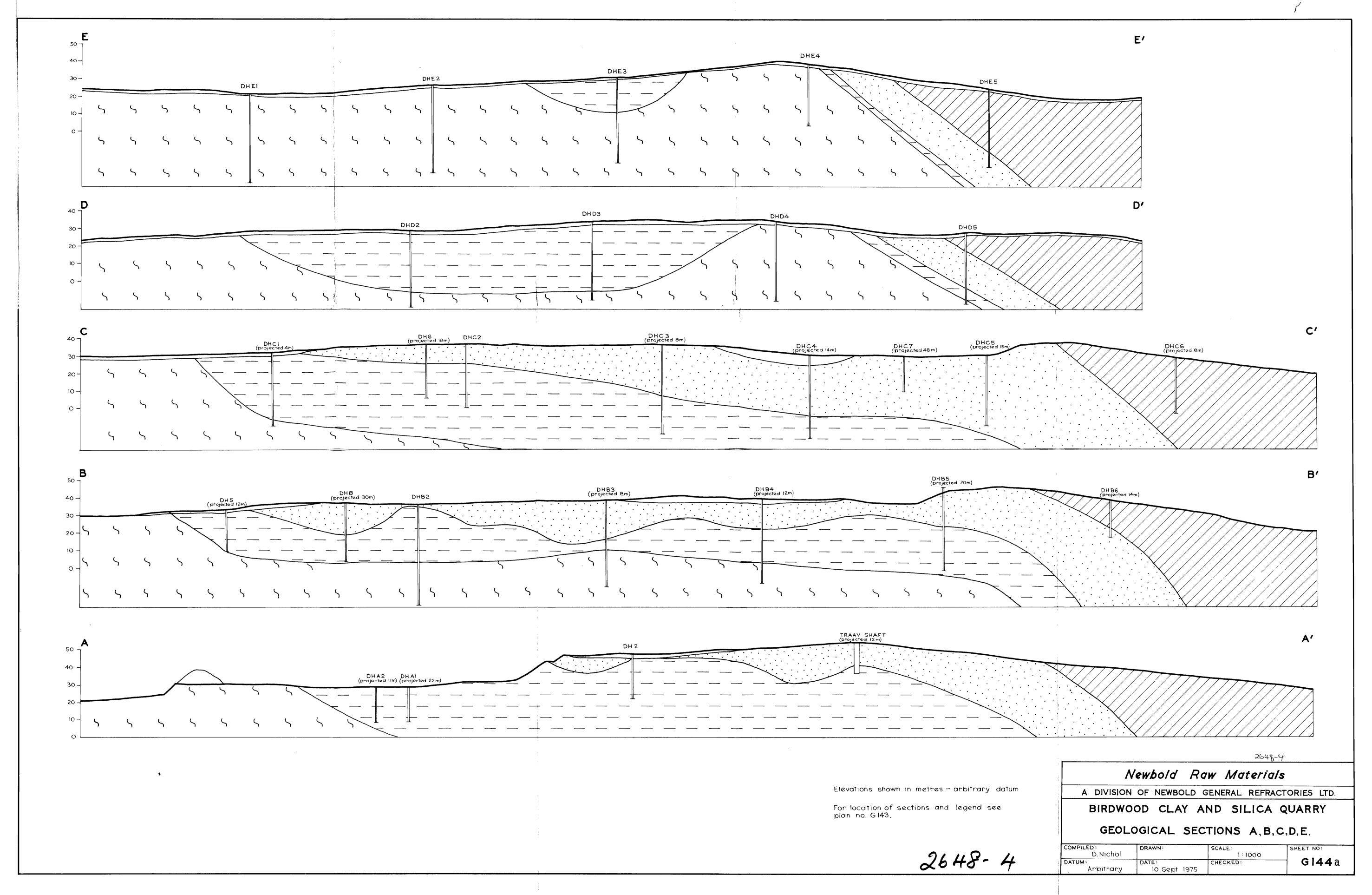
A DIVISION OF NEWBOLD GENERAL REFRACTORIES LTD.

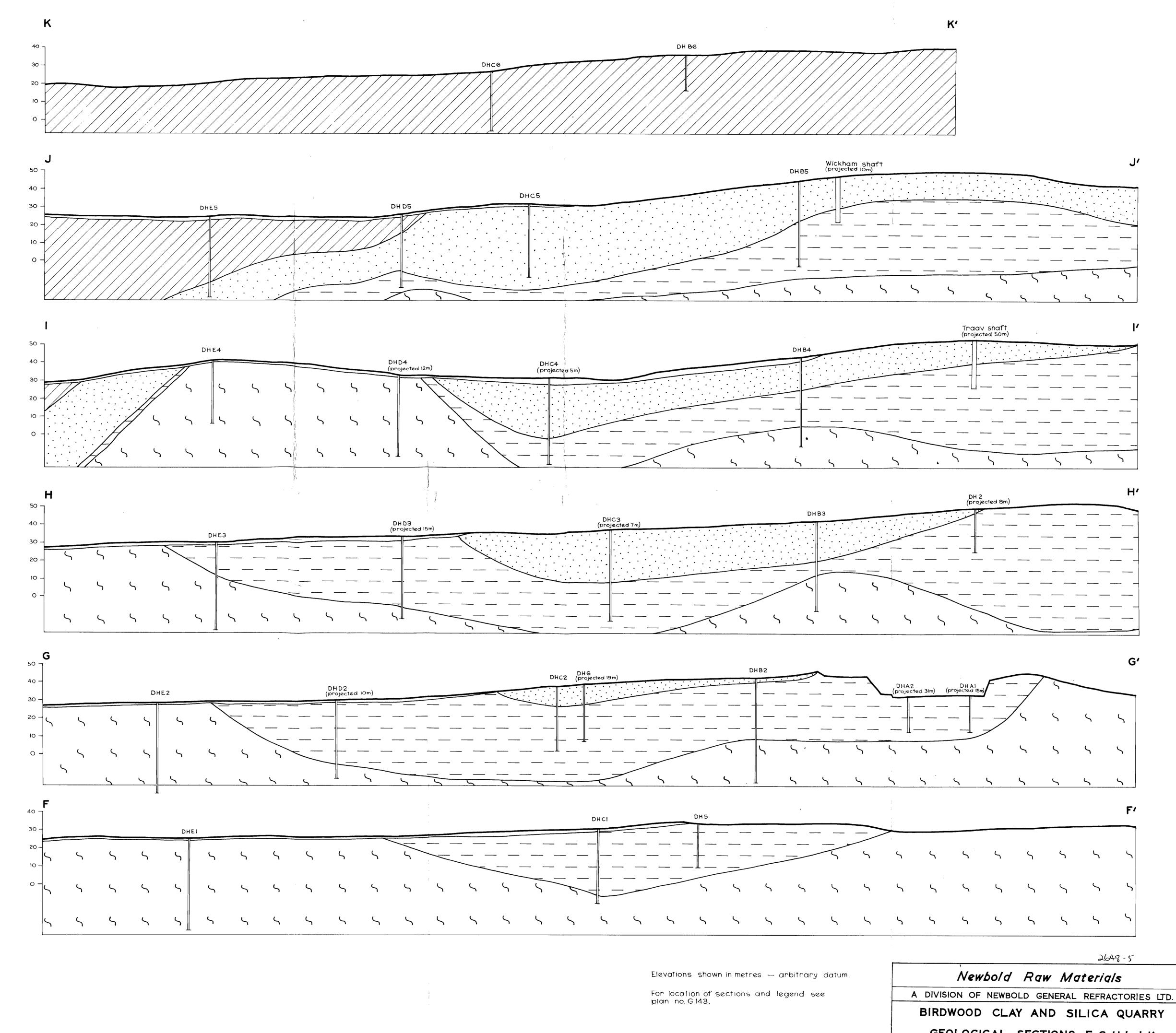
BIRDWOOD CLAY AND SILICA QUARRY SECTIONS I & 6397 HD. TALUNGA REGIONAL GEOLOGY & MINING TENEMENTS

2648-2

COMPILED:
D. Nichol . 1:1582 /5220 CHECKED: S 23 DATE: 10 Sept 1975



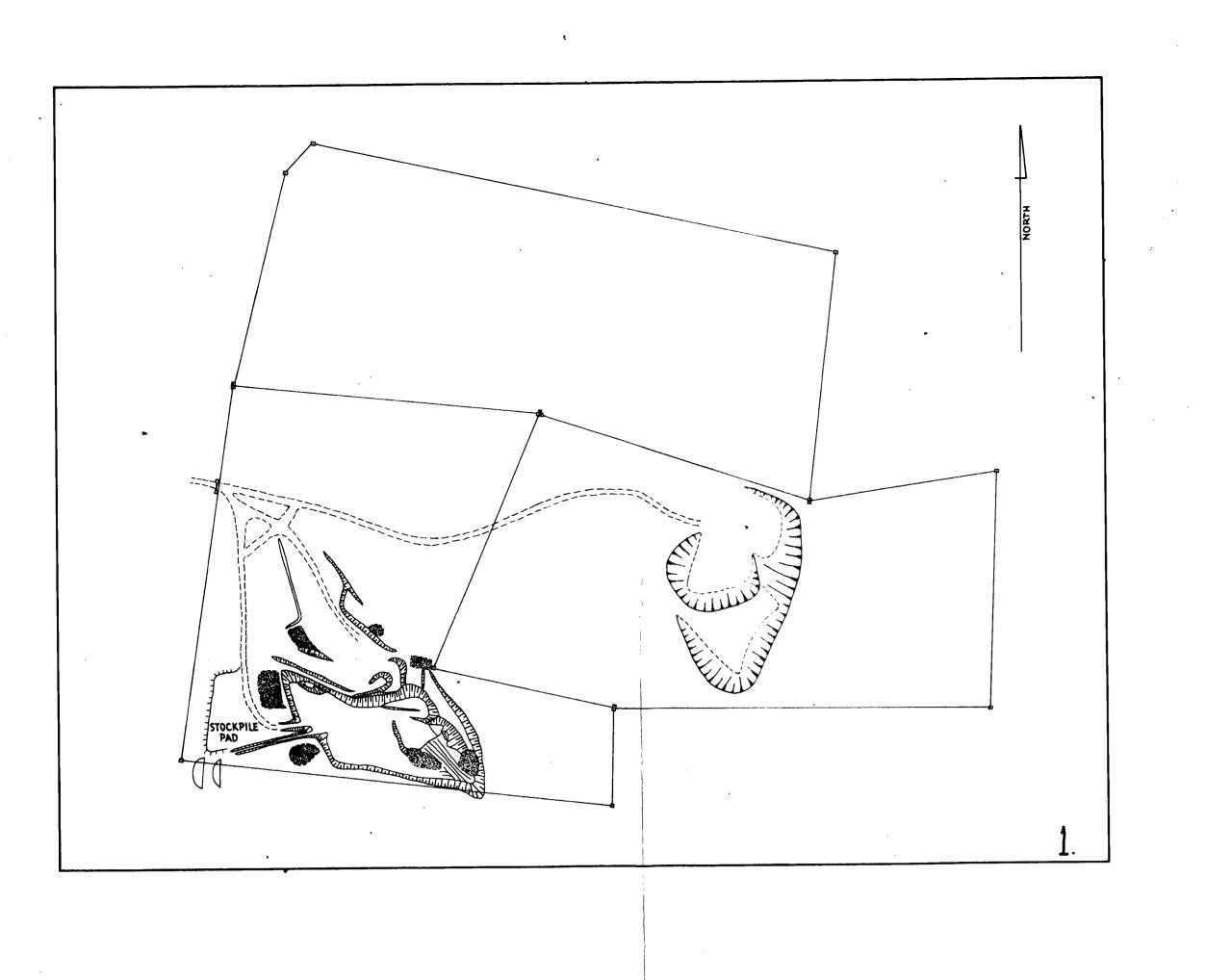


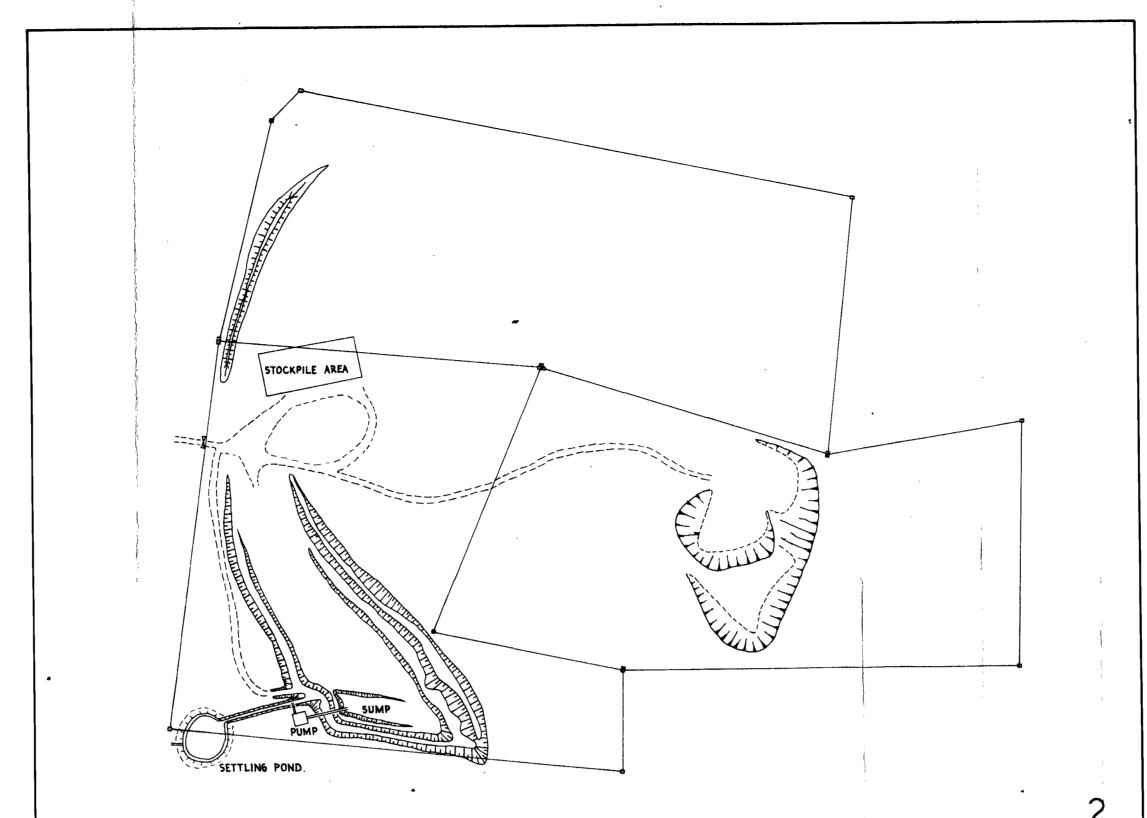


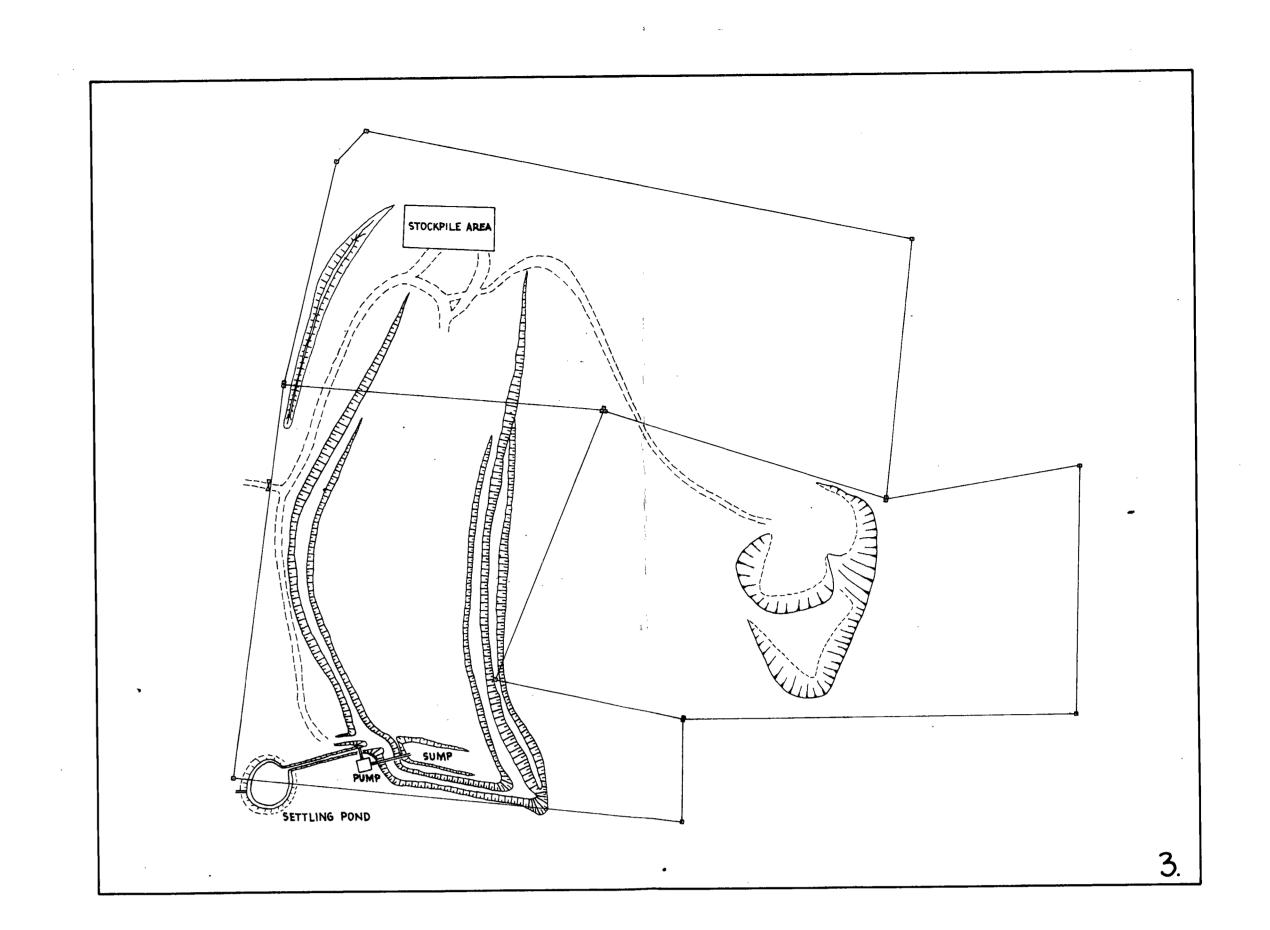
2648-5

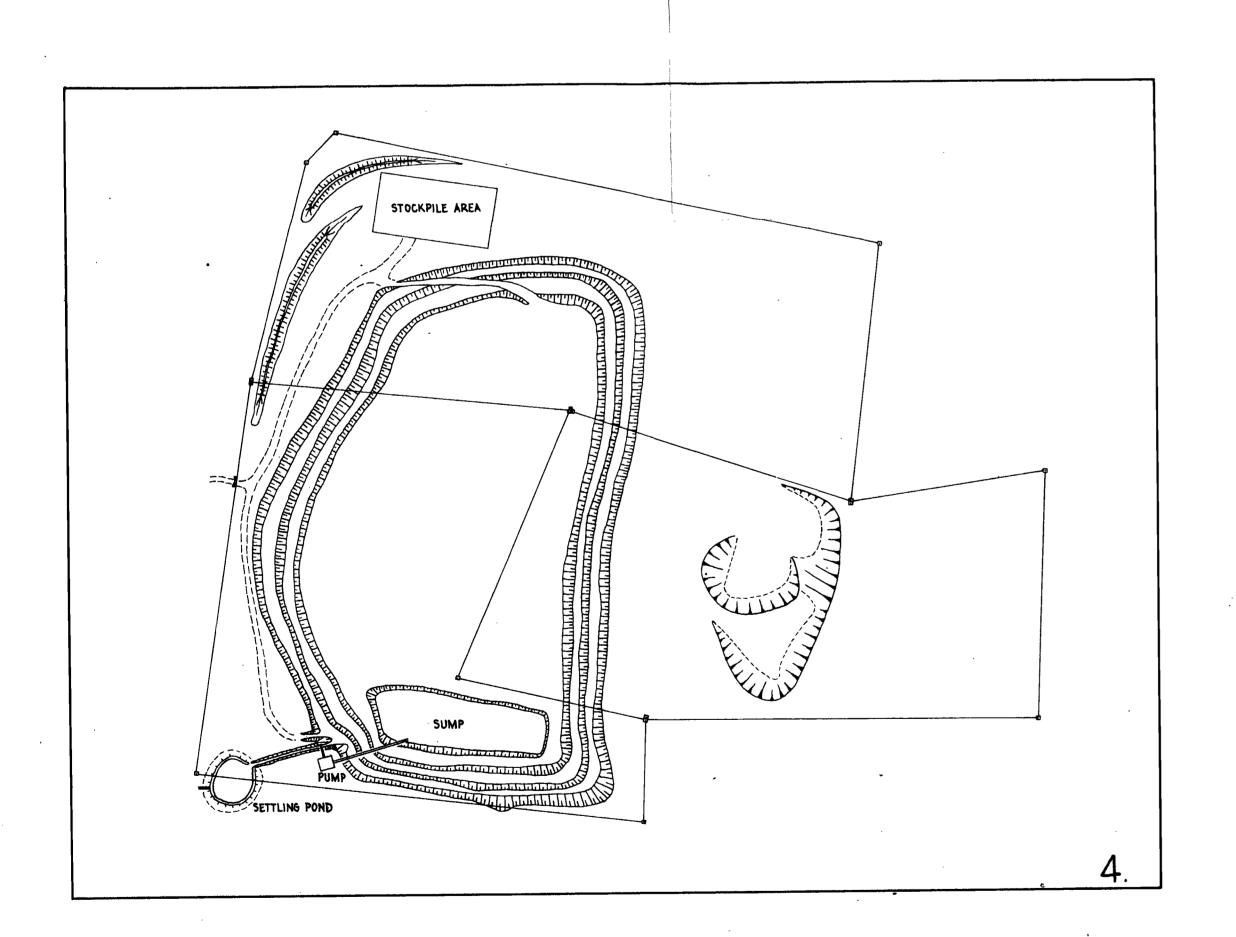
BIRDWOOD CLAY AND SILICA QUARRY GEOLOGICAL SECTIONS F, G, H, I, J, K.

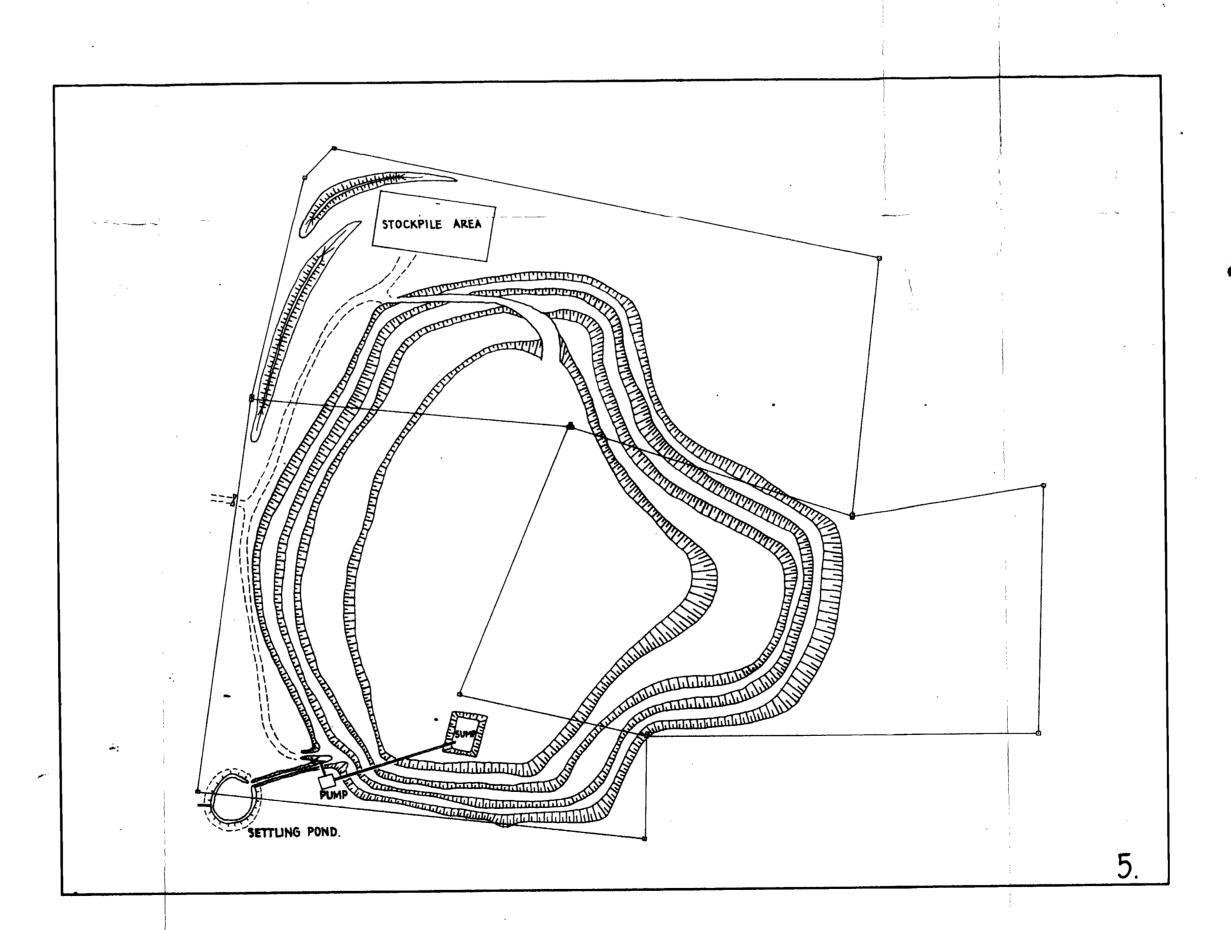
COMPILED: SHEET NO: D. Nichol DATUM: **G |44**b Arbit**r**ary 10 Sept 1975

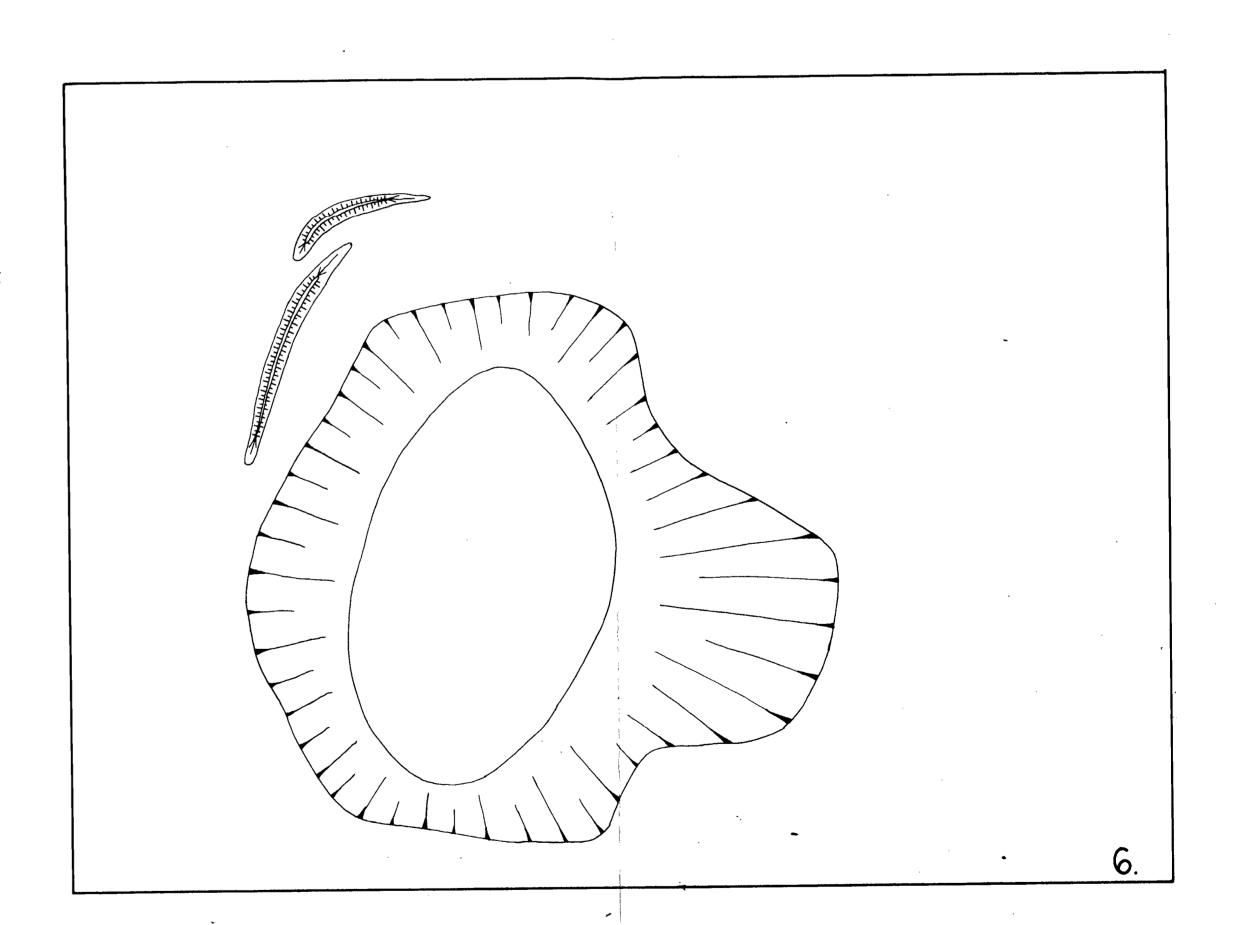












LEGEND

Track

Lease peg & boundary

Pit slope

Waste heaps

Barrier mound

Newbold Raw Materials

A DIVISION OF NEWBOLD GENERAL REFRACTORIES LTD.

BIRDWOOD CLAY AND SILICA QUARRY

DEVELOPMENT PLAN

2648-6

DEVELOPMENT PLAN

COMPILED: DRAWN: SCALE:
D. Nichol. J. A.H. 1: 300

DATUM: DATE: CHECKED: